

# LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

## Volume 5 | Technical Appendices

CFA1-6 | Euston to Ickenham

**Ecological baseline data: designated sites,  
habitat surveys and flora (EC-001-001)**

Ecology

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## Department for Transport

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# **Volume 5: baseline report - EC-001-001**

## **Ecological baseline data (CFA 1-6)**

**Designated sites, habitat surveys and flora**

# 1 Introduction

- 1.1.1 This document is an appendix which forms part of Volume 5 of the environmental statement (ES) for the Proposed Scheme. It details ecological baseline data collected for the following ecological aspects and species:
- designated sites;
  - protected and notable flora;
  - phase 1 habitats;
  - national vegetation classifications;
  - river habitats;
  - river corridors;
  - hedgerows;
  - ditches;
  - ponds; and
  - lake habitats.
- 1.1.2 The ecological baseline data detailed within this document relates to community forum areas (CFA):
- CFA1: Euston - Station and Approach;
  - CFA2: Camden Town and HS1 Link;
  - CFA3: Primrose Hill to Kilburn;
  - CFA4: Kilburn (Brent) to Old Oak Common;
  - CFA5: Northolt Corridor; and
  - CFA6: South Ruislip to Ickenham.
- 1.1.3 This document should be read in conjunction with Volume 2 (community forum area reports), Volume 3 (route wide effects assessment) and Volume 4 (off-route effects assessment).

## 2 Designated sites

### 2.1 Introduction

- 2.1.1 This section of the appendix presents details of sites designated on the basis of their importance for nature conservation which fall within the scope of the ecological assessment for the section of the Proposed Scheme that will pass through CFA1 to CFA6 inclusive.

### 2.2 Methodology

- 2.2.1 Data searches were initially undertaken to identify designated sites within the following extents as defined in the Scope and Methodology Report (SMR):
- statutory designated sites within 10km of the Proposed Scheme (i.e. a 10km buffer either side of the centre-line of the Proposed Scheme within this area); and
  - non-statutory designated sites within 5km of the Proposed Scheme (i.e. a 5km buffer either side of the centre-line of the Proposed Scheme within this area).
- 2.2.2 Information on designated sites was obtained from the following data sources:
- Multi-Agency Geographical Information for the Countryside (MAGIC); and
  - Greenspace Information for Greater London (GiGL)<sup>1</sup>.
- 2.2.3 All sites within the extents defined within the SMR for this area of the Proposed Scheme were then reviewed to identify those that were considered likely to be relevant to the assessment. Due to the large scale of the Proposed Scheme only details of those sites meeting the following criteria are presented within the baseline section:
- all statutory designated sites within a 500m radius of the Proposed Scheme;
  - any other statutory designated sites which are considered potentially subject to significant effects;
  - all non-statutory designated sites within the extent or adjacent to the Proposed Scheme; and
  - any other non-statutory designated sites which are considered potentially subject to significant effects.

### 2.3 Baseline

#### Statutory designated sites

- 2.3.1 Table 1 provides details of statutory designated sites relevant to the assessment, based on the criteria identified in Section 2.2.

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<sup>1</sup> Greenspace Information for Greater London. Available from: <http://www.gigl.org.uk/>. Last accessed: August 2013.

Table 1: Statutory designated sites within CFA1 to CFA6 inclusive

Site name and designation	Ordnance survey (OS) grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
Camley Street Nature Park Local Nature Reserve (LNR)	TQ 299 834	A mosaic of meadow, marsh woodland and open-water habitat, the reserve provides habitat for birds, butterflies, amphibians and plant life. Species include earthstar fungi, reed warblers, kingfishers, geese, mallards, reed buntings and bats.  This site is also an SMI but not within the search area for non-statutory designated sites.	Approximately 470m north-east	CFA1 and 2
Adelaide LNR	TQ 276 843	The site comprises scrub, and part of a woodland containing, among other woody species, ash, sycamore and horse chestnut.	Adjacent	CFA3
Wormwood Scrubs LNR	TQ 222 817	The site comprises grassland communities and a number of species of native trees. The site also supports a population of common lizards and over 100 species of birds have been recorded, along with common mammals and invertebrates including stag beetle.	Within	CFA4
Fox Wood LNR	TQ 181 822	A remnant of ancient woodland to the west of Hanger Hill Park. One of the few remaining woodland areas in Ealing, particularly valuable because of ancient woodland species at the northern end of the site supporting wild flowers, birds and animals.	Approximately 300m south	CFA5
Perivale Wood LNR	TQ 160 837	The site comprises an 11 hectare site made up of ancient oak-ash woodland with an understory of coppiced hazel. In addition to the wood, there is uncultivated grassland, grazed pasture land, a small area of damp scrub, three ponds and two small streams as well as several hedgerows. A number of protected species have been recorded in the reserve including hobby, firecrest, redwing, stag beetle, water vole, a possible sighting of dormouse and a population of slow worm. The site supports over 600 species of fungi, 300 species of moth and 40 species of regularly breeding birds including several Section 41 and London BAP species.	Approximately 50m north	CFA5
Northolt Manor LNR	TQ 132 841	The site of a 14th century moated manor which supports varied habitat that includes meadows, scrub, woodlands, wetlands, ponds and small lakes.	Approximately 150m south	CFA5
Islip Manor LNR	TQ 119 845	The site comprises meadow grassland managed for nature conservation supporting various common grass species with a woodland understorey developing beneath planted horse chestnut, hornbeam and common lime trees.	Approximately 210m south	CFA5
Ruislip Woods Site of Special Scientific Interest	TQ 081892	An extensive example of ancient semi-natural woodland, including some of the largest unbroken blocks that remain in Greater London. A diverse range of oak and hornbeam woodland types occur, with large areas managed on a traditional coppice-	Adjacent at the north-western boundary of the SSSI and approximately 40m north-west at	CFA6

Site name and designation	Ordnance survey (OS) grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
(SSSI)		with-standards system. The site is also unusual in Greater London for the juxtaposition of extensive woodland with other semi-natural habitats, most notably acidic grass-heath mosaic and areas of wetland. These habitats and especially the woodland contain a number of rare or scarce plant and insect species in a national or local context together with a range of breeding birds.  This site is also an NNR. The site is also an SMI but falls outside search area for non-statutory designated sites.	the southern boundary of the SSSI	
Ruislip Woods National Nature Reserve (NNR)	TQ 081892	As above	As per Ruislip Woods SSSI	CFA6
Frays Valley SSSI	TQ 055 865	Frays River meanders through with wildflowers including kingcups in damper areas and ragged-robin. Species include snipe; water vole, harvest mouse, slow worm; willow sp, and banded demoiselle.	Approximately 500 m west	CFA7 (within 500m of CFA6)
Frays Valley LNR	TQ 055 865	As above.	Approximately 500 m west	CFA7 (within 500m of CFA6)

## 2.4 Non-statutory designated sites

2.4.1 Table 2 provides details of non-statutory designated sites relevant to the assessment, based on the criteria identified in Section 2.2.

Table 2 non-statutory designated sites

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
Regent's Park Site of Metropolitan Importance (SMI)	TQ 285 835	Regent's Park supports wide variety of breeding birds due to its size and range of habitats present including mature trees and an ornamental lake. The lake supports a nationally significant number of breeding pochard and a diverse migrant bird population is recorded every spring and autumn.	Within	CFA1
St James's Garden Site of Local Importance (SLI)	TQ 293 827	St James's Garden contains a number of wildflowers, including red dead-nettle, wavy bitter-cress, and common stork's-bill, the latter rare in inner London. The garden also has a number of mature tree species and shrubberies that provide nesting sites for birds. The garden has two small	Within	CFA1

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
		wild areas both containing a good variety of wildflowers.		
London Canals SMI	Various	The Regent's Canal (part of the wider London Canals network) supports important scarce plants and the banks, brickwork, towpaths and associated areas of waste ground support a number of uncommon plants.	Adjacent	CFA 2, (3, 4, and 5)
North London Line Site of Borough Importance Grade 2 (SBI.II)	TQ 299 841	North London Line SBI.II supports ruderal habitat. This site is not accessible to the public and the habitats on railway land provide a corridor resource for wildlife undisturbed by recreational use.	Within	CFA2
Copenhagen Junction Site of Borough Importance Grade 1 (SBI.I)	TQ 302 841	Copenhagen Junction SBI.I provides an important ecological corridor with a mosaic of open and wooded habitats suitable for birds, mammals and insects. A combination of ruderal and rough grassland habitats are dominant features.	Adjacent	CFA2
Chalk Farm Embankment and Adelaide Nature Reserve SBI.I	TQ 276 843	The embankment in the eastern part of the site (extending beyond the eastern boundary of the LNR) has dense secondary woodland chiefly composed of sycamore, horse chestnut and holm oak. The ground flora is dominated by ivy, bramble and false oat-grass.	Within	CFA3
London Canals SMI	Various	The Regent's Canal (part of the wider London Canals network) supports important scarce plants and the banks, brickwork, towpaths and associated areas of waste ground support a number of uncommon plants.	Within	CFA 3 (2, 4, and 5)
Kensal Green Cemetery SMI	TQ 232 825	The banks, brickwork, towpaths and associated areas of waste ground support a number of uncommon plants. Part of the wider canal also supports a range of invertebrate and fish species as well as water vole.	Within	CFA4
Old Oak Common Sidings Birch Wood SBI.I	TQ 216 823	The site comprises a small woodland dominated by silver birch trees with scrub growing around the edges of the woodland. A good range of butterflies, including small skipper and common blue, are found in these more open parts of the site	Adjacent	CFA4
London Canals SMI	Various	Part of the wider London Canals SMI, this site supports scarce water plants including narrow-leaved water plantain, arrowhead, rigid hornwort and several pondweeds, all species of clean, clear waters. The London Wildlife Trust manages a small section of towpath opposite Kensal Green Cemetery as a nature reserve. The towpaths and associated areas of waste ground host a number of uncommon plants too. Further waterside plants can be found on	Within	CFA 4(2, 3, and 5)

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
		the brickwork and banks of the canals, including gypsywort, common skull-cap, trifold bur-marigold and marsh woundwort. Where the Central line crosses the canal at Northolt, there is a small area of fen with common reed and other tall wetland plants south of Carr Road. Fish in the canal include roach, bream, dace, bleak, eel, pike and gudgeon. Non-native crayfish can also be found. Kingfishers are present. Water vole occurs in some areas and in the far west, otter has been recorded.		
Wormwood Scrubs Railway Embankment SBI.I	TQ 232 813	The east of Wormwood Scrubs Railway Embankment comprises woodland. Further south the embankment becomes more open, with a mixture of bramble, rough grassland and tall herbs	Within	CFA <sub>4</sub>
Wormwood Scrubs Park SBI.I	TQ 222 817	Includes damp and dry acid grassland that support good populations of common reptiles and common butterflies. The site also includes a wide variety of trees that support nesting birds. Migratory birds also utilise the site which also attracts rarer bird species such as marsh harriers, whinchats and common redstart	Within	CFA <sub>4</sub>
St Mary's RC Cemetery SBI.II	TQ 226 824	This cemetery includes many mature trees including horse-chestnut, Lombardy poplar and various willows. The graves support some plants, including wild thyme and several species of stonecrops. Lichens growing here include several Cladonia species as well as dog lichen. The latter is rare in London.	Adjacent	CFA <sub>4</sub>
North Acton Cemetery SLI	TQ 206 821	The grasslands on this site are the most interesting feature. The south section of the cemetery has the most flower-rich grasslands with a variety of herbs here including yarrow, cat's-ear, autumn hawkbit, oxeye daisy, common bird's-foot-trefoil, and selfheal. Sneezewort also occurs here. This is a species that normally indicates old unimproved grassland. The management here allows these flowers to survive by cutting the sward only every few weeks and by not using herbicides. The graves themselves provide habitat for invertebrates on disturbed soil and stony substrates. Additional habitat for birds is provided by the scattered trees which mainly occur around the edges. The northern and central parts of the cemetery have a good number of mature trees. Many of the trees here are conifers including western red-cedar and Monterey cypress.	Adjacent	CFA <sub>4</sub>
Acton Railsides SBI.I	TQ 195 815	These rail cuttings in the North Acton area are particularly wide and provide varied semi-natural wildlife corridors. Habitats vary from one section to another. In places woodland and scrub predominate, but much of the cuttings are more	Within	CFA <sub>4</sub> and CFA <sub>5</sub>

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
		open with grassland and tall herb habitats. The grassland is quite colourful with a variety of herbs. Some of the grasslands are managed to prevent woody species establishing which also retains their current wildlife interest. These habitats are quite unusual on railsides elsewhere in Ealing which are mainly narrower and more dominated by woody species with grassland normally confined to small patches or narrow strips. The sidings in the south provide further variety with good conditions for ruderals on and between the tracks. Piles of sand and bare ground provide niches for reptiles and many invertebrates. The space between the intersecting rail lines in the east of the site supports a substantial area of undisturbed woodland and scrub which enhances the value of the site further.		
Silverlink Metro & Dudding Hill Loop in Ealing SBI.II	TQ 212 820	Includes limited semi-natural habitat in narrow strips. Ruderal vegetation is quite frequent. Other sections of the site include woodland and scrub.	Within	CFA 4
Former Guinness Mounds SBI.II	TQ191 823	Comprise two mounds on both sides of a railway cutting on which habitats have developed on waste construction material. Habitats comprise secondary woodland, scrub, semi-improved neutral grassland, scattered trees, ruderal, tall herbs and areas of bare ground.	Within	CFA5
Hanger Lane Gyrratory SLI	TQ 184 827	This small site is surrounded by the busy Hanger Lane gyratory. The northern section is a formally managed park with amenity grassland and scattered trees. On the railway cutting along the south, semi-natural pedunculate oak woodland survives. The centre of the site is occupied by rough grassland with wildflowers surrounded by scrub. The scrub provides a gradual transition from the woodland to the grassland making the site suitable for many 'woodland edge' species of birds and invertebrates.	Within	CFA5
River Brent at Hanger Lane SBI.II	TQ 182 832	Comprise a canalised section of the River Brent with strips of semi-natural habitat adjacent along the south bank supporting scrub, scattered trees and ruderal vegetation.	Adjacent	CFA5
Central Line, West Ruislip Branch SBI.II	TQ 084 868	The Central Line is in cutting at either end, runs on embankment in the middle, and is well vegetated and reasonably wide almost throughout its length. Habitats are quite varied and include some woodland, scrub and grassland suitable for a range of species.	Within	CFA5 and adjacent to CFA6
Ealing Central Sports Ground SLI	TQ159 831	Comprise a stream/ditch which is largely in an underground pipe, but supports with marginal vegetation where it surfaces and a large outgrown hedge which may be a remnant of the field	Within	CFA5

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
		boundaries in the former countryside. Both are located on the edge of large area of amenity grassland, Ealing Central Sports Ground.		
Perivale Wood SMI	TQ 160 837	Perivale Wood, the second oldest nature reserve in Britain, is made up chiefly of ancient oak-ash woodland, with its understorey of coppiced hazel. In addition to the wood, there is uncultivated grassland, grazed pasture land, a small area of damp scrub, three ponds and two small streams as well as several hedgerows. It is bounded on the northern edge of the wood by the Grand Union Canal.	Adjacent	CFA5
London Canals SMI	Various	Part of the wider London Canals SMI, this site supports scarce water plants including narrow-leaved water plantain, arrowhead, rigid hornwort and several pondweeds, all species of clean, clear waters. Further waterside plants can be found on the brickwork and banks of the canals, including gypsywort, common skull-cap, trifold bur-marigold and marsh woundwort. Where the Central line crosses the canal at Northolt, there is a small area of fen with common reed and other tall wetland plants south of Carr Road. Fish in the canal include roach, bream, dace, bleak, eel, pike and gudgeon. Non-native crayfish can also be found. Kingfishers are present. Water vole occurs in some areas and in the far west, otter has been recorded.	Within	CFA 5 (2, 3, and 4)
Railside Habitats: Harlesden to Wembley Central, including Wembley Brook SBI.I	TQ 184 847	Comprise part of the network of railside habitats in Brent. The railside supports a mosaic of scattered trees, scrub, semi-improved neutral grassland, tall herbs and bare ground, the proportions depending on the substrate and the frequency and nature of management.	Within	CFA5
Abbey Road Mound and Bestway Park SBI.II	TQ 193 834	Comprises a grassy embankment alongside a footpath. Scrub, semi-improved grassland, tall herbs and ruderal vegetation is present along with planted ornamental and native shrubs.	Adjacent	CFA5
Ruislip Wood and Poor's Field SMI	TQ 081892	The SMI is part of Ruislip Woods SSSI and an NNR (see SSSI description).	Adjacent	CFA6
Victoria Road Railway Banks SBI.II	TQ 121 849	This is an extensive area of scrub and trees around a railway junction, and surrounding a waste transfer station. More open areas, particularly close to the railway, support diverse roughland and ruderal habitats. Hard rush occurs in seasonally-damper areas at the bases of the embankments and cuttings. The site is likely to be utilised by birds, mammals, and a wide range of invertebrates.	Within	CFA6

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
Yeading Brook Roxbourne Park and Ruislip Garden SBI.II	TQ 109 863	This section of Yeading Brook riverside walk comprises the brook and riparian habitats, and adjacent areas of rough grassland and native hedgerow. The river flows to the east, alongside field end recreation grounds. Field End recreation ground has a large area of rough grassland, dominated by perennial rye grass to the north, and native trees and scrub along significant lengths of its margins. To the west of Field End Road, curled pondweed and a water crowfoot occur in the river, where small fish can be seen. Habitats are likely to support saproxylic (associated with dead or dying wood) invertebrates. The nationally notable leaf-beetle feeds on the flowers of cow parsley, and the high insect diversity along the riverside also includes numerous solitary bees and hoverflies.	Within	CFA6
Herlwyn Park SBI.II	TQ 090 866	The park comprises areas of amenity grassland, with rugby pitches used by Ruislip RFC, partially divided by a line of trees. An outgrown hedgerow with trees marks the eastern boundary of the site, and there is hornbeam among this group. There are good rough grassland and scrub habitats at several points. The railway embankments comprise dense trees and scrub which is likely to provide shelter and feeding habitats for a range of birds, mammals and invertebrates.	Within	CFA6
Ruislip Golf Course and Old Priory Meadows SBI.I	TQ 078 874	The site is made up of two sections on opposing banks of the River Pinn. The area to the west of the river comprises of Old Priory meadow, a site rich in wildflowers. A pond beside the railway embankment once supported great crested newts, but the current status is uncertain	Within	CFA6
Mad Field Covert, Railway Mead and the River Pinn SBI.II	TQ 073 864	Railway Mead is an area of herb-rich grassland to the south of the railway, bounded by mature hedgerows of mainly oak. The grassland supports abundant common species including knapweed. Green woodpeckers are regularly seen in this area. Mad Field Covert is a stand of oak and ash woodland. The ground flora is dominated by bramble. The River Pinn is shallow and slow-flowing, with a silted bed. There is a pond beside the river. Kingfisher are also present, along with speckled wood butterflies and ruddy darter dragonfly	Within	CFA6
Newyears Green SBI.I	TQ 065 878	This covert comprises a canopy species dominated by pedunculate oak, ash and hornbeam. Also present is the locally scarce, buckthorn, and musk thistle which is in the field between the ditch and Highway Farm buildings	Within	CFA6
Brackenbury Railway Cutting SBI.II	TQ 064 873	The site comprises a broad, wooded railway cutting. The dense tree and scrub cover is dominated by pedunculate oak, elder and English elm. An oak-	Within	CFA6

Site name and designation	OS grid reference	Site description	Approximate distance from the Proposed Scheme (m) and orientation	Relevant CFA number
		dominated copse situated by the roadside to the south-west is also included in the site.		
Common Plantation and Park Wood SBI.II	TQ 068 853	two areas of woodland separated by the A40 and dominated by pedunculate oak , sycamore and ash. Damp areas support grey, crack and goat willows and the woodland floors are dominated by bramble. Park Wood lies to the east of the River Pinn and is believed to be a remnant of ancient woodland. The canopy is fairly open and unusually, dominated by ash and wych elm. The River Pinn flows through the woodland, where dense shade has limited the aquatic flora.	Adjacent	CFA6

## 3 Protected and/or notable flora

### 3.1 Introduction

- 3.1.1 This section of the appendix presents details of baseline information relating to protected and/or notable flora (including veteran trees) for the section of the Proposed Scheme that will pass through CFA 1 to 6 inclusive.

### 3.2 Methodology

- 3.2.1 Desk study records relating to protected and/or notable flora (including veteran trees) were obtained from the following data sources.
- Pre-existing data were requested from Greenspace Information for Greater London (GiGL)<sup>2</sup>, as part of the wider desk study, including citations for non-statutory designated sites.
  - Where publically available, information has been gathered from site management plans, including that of the Adelaide Local Nature Reserve (LNR)<sup>3</sup>.
  - Information specifically provided by third parties, e.g. site species lists.
- 3.2.2 In addition records of protected and/or notable flora were made during the course of Phase 1 habitat and NVC surveys conducted in support of the Proposed Scheme. Protected and/or notable flora are those categories included on the JNCC Conservation Designations for UK Taxa list<sup>4</sup> and the London Priority list<sup>5</sup> and also species recorded during field surveys or included in species lists supplied by third parties that are considered, on the basis of expert opinion, to be uncommon and confined to and characteristic of good plant habitats such as old grassland, long-established wetlands, or ancient woodland. The London Biodiversity Action Plan Priority Species and Species of Conservation Concern list<sup>5</sup> is referred to in the remainder of this report as the 'London Priority List'.

### 3.3 Deviations, constraints and limitations

- 3.3.1 There were no restrictions on access to desk study records which have constrained the available baseline.
- 3.3.2 Constraints and limitations with regards to field surveys are the same as for Phase 1 surveys. The main constraints are as follows, with detail provided in Phase 1 Habitat Survey:
- completeness of survey data was affected by lack of access and the date of the visit;

<sup>2</sup> Greenspace Information for Greater London, Available from: <http://www.gigl.org.uk/>.

<sup>3</sup> Lawrence, D R. and TR root (2012), *Adelaide Local Nature Reserve Management Plan*. Available from: <http://natureforthecommunity.co.uk/wp-content/uploads/2012/02/Management-Plan-Adelaide-LNR-2012-17.pdf>, First accessed: May 2012.

<sup>4</sup> Joint Nature Conservation committee, Available from: <http://jncc.defra.gov.uk/page-3408>, First accessed: May 2013.

<sup>5</sup> London Biodiversity Partnership, Available from: <http://www.lbp.org.uk/londonpriority.html>, First accessed: May 2013.

- when surveying from Public Rights of Way (PRoW) very little of the extensive Phase 1 protocol could be implemented. It was not possible to walk over habitats to assess the species present and therefore the identity and character of the vegetation and habitat types; and
- some sites were visited at times of year when many plant species are not in evidence, and others are hard to identify (especially the winter months). At any time of year a few species may be difficult to identify because they lack seasonal characters essential to identification, e.g. fruits.

### 3.4 Baseline

- 3.4.1 Those records of protected and/or notable species which are located within or adjacent to the Proposed Scheme, and those of any more distant species, which are considered potentially subject to adverse effects, are considered relevant to the assessment and are reported below.

#### Desk study

- 3.4.2 A summary of desk study records of protected or notable flora considered relevant to the assessment is provided in Table 3.
- 3.4.3 Records of declining arable weeds, including in cornflower (*Centaurea cyanus*) and chamomile (*Chamaemelum nobile*), were reported from the vicinity of Euston Gardens (CFA1) and from Adelaide LNR (CFA3). The overwhelming probability is that these are planted species from wildflower seed mixes and as such they are not considered to be of relevance.

Table 3: Desk study records of protected and/or notable species records relevant to the assessment in CFA 1 to 6 inclusive

Common name	Latin name	Status	Location	Comments (Source of record etc)	OS grid reference	CFA	Within the Proposed Scheme (Yes/No)
Marsh Sow-thistle	<i>Sonchus palustris</i>	Nationally Scarce W&CA S.13(b);	Urban area between Euston Station and Regent's Park.	GiGL  (presumably casual or planted)	TQ2983	1	Yes
Black Poplar	<i>Populus nigra</i> subsp. <i>betulifolia</i>	London Species Action Plan (SAP).	Off Freight Lane, north of the Grand Union Canal.	GiGL	TQ00840	2	Yes
Black Poplar–	<i>Populus nigra</i> subsp. <i>betulifolia</i>	London SAP.	Just outside the 100m buffer, on the south bank of the GUC south of Kensal Green Cemetery, adjacent to the gas works.	GiGL	TQ234824	4	No
Black Poplar	<i>Populus nigra</i> subsp. <i>betulifolia</i>	London SAP.	Just outside the 100m boundary at Little Wormwood Scrubs	GiGL	TQ2382	4	No

Adders-tongue fern	<i>Ophioglossum vulgatum</i>	Uncommon in the London area.	Grassland at Perivale LNR and SMI, Ealing	Recorded during field surveys.	TQ158835	5	No
Betony	<i>Betonica officinalis</i>	Uncommon in the London area.	Grassland at Perivale LNR and SMI, Ealing	Relatively scarce in old grassland in London area.	TQ158835	5	No
Lily-of-the-valley	<i>Convallaria majalis</i>	On waiting list section of London Priority List.	Grassland at Perivale LNR and SMI, Ealing	Is likely to be a garden escape.	TQ158835	5	No
Wood Anemone	<i>Anemone nemorosa</i>	Ancient woodland indicator species.	Woodland at Perivale LNR and SMI, Ealing	Ancient woodland indicator species.	TQ158835	5	No
Narrow-leaved water-dropwort	<i>Oenanthe silaifolia</i>	Red Data List: nationally scarce Local Biodiversity Action Plan (BAP) and London BAP.	Yeading Brook between Roxbourne Park and Ruislip Garden Site of Borough Importance Grade 2 (SBI.II)	SBI citation.	TQ 109 863	6	No
Water chickweed	<i>(Myosoton aquaticum),</i>	Locally scarce species.	Ruislip Golf Course and Old Priory Meadows Site of Borough Importance Grade 1 (SBI.I)	SBI citation.	TQ 078 874	6	Yes
Buckthorn	<i>Rhamnus cathartica</i>	Locally scarce.	Newyears Green SBI.I	SBI citation.	TQ 065 878	6	Yes
Bearded couch	<i>Elymus caninus</i>	Locally uncommon.	Newyears Green SBI.I	SBI citation.	TQ 065 878	6	Yes
Musk thistle	<i>Carduus nutans,</i>	Locally scarce.	Newyears Green SBI.I	SBI citation.	TQ 065 878	6	Yes

## Field survey

3.4.4 A summary of protected or notable flora considered relevant to the assessment recorded during field surveys is provided in Table 4 .

Table 4: Records of protected and or notable species records relevant to the assessment obtained during field survey in CFA 1 to 6 inclusive

Common name	Latin name	Status	Location	Comments	OS grid reference	CFA	Within the Proposed Scheme (Yes/No)
Ragged robin	<i>Lychnis flos-cuculi</i>	Least Concern on The Vascular Plant Red Data List for Great Britain	Grassland at Perivale LNR and SMI, Ealing	Recorded during field surveys.	TQ158835	5	No
Bluebell	<i>Hyacinthoides non-scripta</i>	On waiting list section of London Priority List. Schedule 8 of the Wildlife and Countryside Act 1981.	Woodland at Perivale LNR and SMI, Ealing		TQ158835	5	No
Wood Millet	<i>Milium effusum</i>	Ancient woodland indicator species.	Woodland at Perivale LNR and SMI, Ealing	Ancient woodland indicator species.	TQ158835	5	No
Common Broomrape	<i>Orobanche minor</i>	Species is of moderate local interest.	Towpath of Gran Union Canal at Greenford	Recorded during field surveys.	TQ141182	5	No
Zig-zag clover	<i>Trifolium medium</i>	Species is of local conservation interest.	Ickenham Green, Hillingdon	Recorded during field surveys.	TQ 075 870	6	No
Pignut	<i>Conopodium majus</i>	Least Concern on The Vascular Plant Red Data List for Great Britain.	Ickenham Green, Hillingdon	Recorded during field surveys.	TQ 075 870	6	No
Pepper-saxifrage	<i>Silene silaus</i>	Least Concern on The Vascular Plant Red Data List for Great Britain.	Ickenham Green, Hillingdon	Uncertain ID (only the leaves were present).	TQ075870	6	No
Broad-leaved Helleborine	<i>Epipactis helleborine</i>	Least Concern on The Vascular Plant Red Data List for Great Britain.	Rail tracks near Breakspear Road South, Hillingdon	Recorded during field surveys.	TQ 071 871	6	Yes

## 3.5 Discussion

### CFA<sub>1</sub>

- 3.5.1 No protected or notable plant species have been recorded during field surveys in CFA<sub>1</sub>.
- 3.5.2 The records of species reported from CFA<sub>1</sub> are considered to be of planted species or those which are casuals (transient and not established populations). As such they are not considered to be of relevance to this assessment.

### CFA<sub>2</sub>

- 3.5.3 No protected or notable plant species have been reported from desk study or recorded during field surveys in CFA<sub>2</sub>.

### CFA<sub>3</sub>

- 3.5.4 No protected or notable plant species have been reported from desk study or recorded during field surveys in CFA<sub>3</sub>.

### CFA<sub>4</sub>

- 3.5.5 Black poplar was recorded during desk study. Planted black poplars are known to be present within this area of London. The sub-species *Populus nigra* ssp. *betulifolia* is a London Habitat Action Plan species and a BAP species in the Royal Borough of Kensington and Chelsea. The species is rare in London, and suffers from an aging population and genetic contamination through hybridisation with other poplar sub-species and species.
- 3.5.6 No other protected or notable plant species have been reported from desk study or recorded during field surveys in CFA<sub>4</sub>.

### CFA<sub>5</sub>

- 3.5.7 At the Perivale Wood SMI, the fern adder's-tongue (*Ophioglossum vulgatum*) has been recorded from (probably) unimproved mesotrophic grassland between the woodland and the railway. It is both characteristic of such grassland and uncommon in the London area (though not included on the London Priority List). The same applies to other species that have been recorded in this grassland including betony (*Betonica officinalis*) and ragged-robin (*Silene flos-cuculi*), which latter was confirmed in surveys for the Proposed Scheme. The wood has a large population of bluebell (*Hyacinthoides non-scripta*), which is included in the London Priority List on account of its cultural importance rather than rarity. It also has ancient woodland indicator species such as wood anemone (*Anemone nemorosa*) and wood millet (*Milium effusum*) that are not on the London Priority List.
- 3.5.8 Common minor (*Broomrape Orobanche*) was recorded on the towpath of the Grand Union Canal at Greenford. This species is not on the London Priority list, but is of modest local interest.
- 3.5.9 No other protected or notable plant species have been reported from desk study or recorded during field surveys in CFA<sub>5</sub>.

## CFA6

- 3.5.10 At Yeading Brook, narrow-leaved water-dropwort (*Oenanthe silaifolia*) is reported in the SBI citation. This species is included in the London BAP, and has the status of very rare within London, being found only at this one site<sup>6</sup>. The species has a scattered national distribution, but is listed as nationally scarce.
- 3.5.11 The locally scarce species water chickweed (*Myosoton aquaticum*) is reported in the SBI citation for Ruislip Golf Course and Old Priory Meadows. This species is fairly common in England and Wales, and so it is of no more than local interest.
- 3.5.12 At Newyears Green SBI.I, three locally scarce or locally uncommon plants buckthorn (*Rhamnus cathartica*), bearded couch (*Elymus caninus*) and musk thistle (*Carduus nutans*) are reported in the SBI citation. These species are only of local interest as they are locally common and scattered throughout lowland England.
- 3.5.13 Field surveys recorded a number of species of local conservation interest, including zig-zag clover (*Trifolium medium*), pignut (*Conopodium majus*) and (uncertain identification of late-summer leaves) pepper saxifrage (*Silaum silaus*), at Ickenham Green in an area of either unimproved grassland or grassland enhancement with a wild-flower seed-mixture. Further survey is required to determine this but access for detailed surveys was not permitted. These species are not of high conservation interest but are of local conservation interest, given the urban-fringe context.
- 3.5.14 Broad-leaved helleborine (*Epipactis helleborine*) was recorded on rail tracks near Breakspear Road South during field surveys. It is listed as Least Concern on the Vascular Plant Red Data List for Great Britain. It is relatively common in lowland Britain and as such is of not more than local interest.
- 3.5.15 Though species listed in citations for non-statutory designated sites in CFA6 (and certain species noted in field survey) have been treated here as notable species, they are mostly species of modest note in lowland Britain generally, which have enhanced value in the urban-fringe context. It is theoretically possible that species of greater note (including protected species) could be present in woodland, hedgerow, grassy verge and small wetland habitats where access for survey was restricted, e.g. at Bayhurst Wood. However, the fact that these habitats are all of kinds common in the wider district and in lowland Britain generally, combined with the fact that there are no existing records of highly notable species, makes it unlikely that such highly notable species are present.

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<sup>6</sup> London Biodiversity Action Plan (2007), *Priority Species – Narrow-leaved water-dropwort*, Available from: <http://www.lbp.org.uk/downloads/PriorityPlants/Narrow-leavedWaterDropwort.pdf>.

## 4 Phase 1 habitat survey

### 4.1 Introduction

- 4.1.1 This section of the appendix presents details of the Phase 1 habitat survey<sup>7</sup> data relevant to the section of the Proposed Scheme that will pass through Community Forum Area (CFA) 1 to 6 inclusive.
- 4.1.2 While the survey was conducted as an Extended Phase 1 habitat survey (i.e. to include scoping for presence or potential to support protected and/or notable species) only the habitat survey elements are reported in this appendix. Outputs relating to protected and/or notable species are reported where relevant within the corresponding appendix for that species/species group.

### 4.2 Methodology

- 4.2.1 Details of the standard methodology utilised for Extended Phase 1 habitat in support of the Proposed Scheme are provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2).
- 4.2.2 Where access has not been available for field survey then where available data from pre-existing habitat surveys has been utilised to provide a description of habitats relevant to the assessment. In all other case interpretation of aerial photography has been used to provide an indication of the likely habitats present.
- 4.2.3 Pre-existing data was requested from Greenspace Information for Greater London (GiGL)<sup>8</sup>, as part of the wider desk study, including citations for non-statutory designated sites. No further relevant information was returned.
- 4.2.4 Where publically available, information has been gathered from site management plans, including that of Adelaide Local Nature Reserve (LNR)<sup>9</sup>.
- 4.2.5 Reference has been made to the local Biodiversity Action Plans of the relevant London Boroughs.

### 4.3 Deviations, constraints and limitations

- 4.3.1 Due to the continuous nature of the Phase 1 survey scope it is not considered useful to attempt to identify individual locations where survey work was not undertaken.
- 4.3.2 Completeness of survey data was affected by lack of access and the date of the visit.
- 4.3.3 Sites at which access permitted Phase 1 habitat survey to be undertaken were:
- St. Pancras Parish Church, Euston Road, London (CFA1) surveyed on 14 November 2012;

<sup>7</sup> Phase 1 habitat survey is the standard system for classifying and mapping habitats. The methodology is defined within Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - a technique for environmental audit*. JNCC, Peterborough.

<sup>8</sup> <http://www.gigl.org.uk/>.

<sup>9</sup> Lawrence, D R. and TR root (2012), *Adelaide Local Nature Reserve Management Plan*. Available from: <http://natureforthecommunity.co.uk/wp-content/uploads/2012/02/Management-Plan-Adelaide-LNR-2012-17.pdf>, First accessed: May 2012.

- Land and building lying to the North East of Park Village a strip of land adjoining the north-eastern boundary of the Regent's Park Riding School (CFA1) surveyed on 14 November 2012;
- Land adjoining the Roundhouse, Chalk Farm Road (CFA2) surveyed on 14 November 2012;
- Land and buildings on the south side of Chalk Farm Road (CFA2) surveyed on 14 November 2012;
- Little Wormwood Scrubs(CFA4) surveyed on 26 February 2013;
- Wormwood Scrubs and Embankments (CFA4) surveyed on 26 February 2013;
- Grand Union Canal at Old Oak Common (CFA4) surveyed on 23 May 2013;
- Kensal Green All Souls Cemetery, Harrow Road, London (CFA4) surveyed on 6 December 2012;
- St Mary's RC Cemetery (CFA4) surveyed on 29 May 2013;
- Network Rail land from Hanger Lane to Alperton Lane, Ealing (CFA5) surveyed between 12-14 November 2012;
- Hanger Lane gyratory, Ealing (CFA5) surveyed on 16 May 2013;
- Network Rail land within 250m of the Hanger Lane vent shaft main compound, Ealing (CFA5) surveyed between 8-10 April 2013;
- Chelsea House, Westgate, Ealing (CFA5) surveyed on 16 May 2013;
- Scrub adjacent to River Brent at Westgate, Ealing (CFA5) surveyed on 11 July 2013;
- Alperton Depot, Alperton Lane, Ealing (CFA5) surveyed on 12 November 2012;
- Land to the east of Alperton Lane, Ealing (CFA5) surveyed on 12 November 2012;
- River Brent, Ealing (CFA5) surveyed on 31 May 2013;
- Bentham Meadows, Ealing, (CFA5) surveyed on 31 January 2013;
- Network Rail land from Alperton Lane to Lyon Way, Ealing (CFA5) surveyed between 12-14 November 2012;
- Diageo site and Guinness Mounds, Ealing, (CFA5) surveyed on 12 March 2013;
- Perivale Methodist Church (CFA5) surveyed on 6 December 2012;
- Ealing Central Sports Ground (CFA5) surveyed on 12 November 2012;
- Perivale Wood (CFA5) surveyed on 8 October 2012;
- Land at Greenpark Way Industrial Park, Greenpark (CFA5) way surveyed between 11 - 15 March 2013;

- Network Rail land from Lyon Way to Mandeville Road, Ealing (CFA5) surveyed between 12-14 November 2012;
- Network Rail land from Mandeville Road to Long Drive, Ealing (CFA5) surveyed between 12-14 November 2012;
- LUL land within 250m of TLT of Badminton Close / Mandeville Road Shaft Location (CFA5) surveyed between 28-31 May 2013;
- Land south of Badminton Close and east of Mandeville Road, Ealing (CFA5) surveyed between 12-14 November 2012;
- Grand Union Canal - Greenford (CFA5) surveyed on 8 June 2012;
- Ruislip Shaft location access (CFA6) surveyed on 1 October 2012;
- South Ruislip vent shaft main compound (CFA6) surveyed on 1 October 2012;
- Network Rail Land from Long Drive to Ickenham Road Hillingdon (CFA6) surveyed between 12-14 November 2012;
- Oak Farm, Breakspear Road South (CFA6) surveyed on 7 September 2012;
- Dunster Cottage, Breakspear Road South (CFA6) surveyed on 17 October 2012;
- Land on the east side of Breakspear Road South (CFA6) surveyed between 15-17 January 2013;
- Network Rail Land from Ickenham Road to Breakspear Road South, Hillingdon (CFA6) surveyed between 12-14 November 2012;
- Land on the north west side of Breakspear Road South, South Harefield, Ickenham, (CFA6) surveyed on 17 October 2012;
- Highway Farm, Harvil Road (CFA6) surveyed between 11 - 15 March 2013;
- Gatemead Farm, Breakspear Road South (CFA6) surveyed on 17 October 2012;
- Ickenham Pumping Station (CFA6) surveyed on 30 May 2013;
- Brackenbury House and Farm, Brackenbury Barn (CFA6) surveyed on 24 January 2012;
- Copthall Farm, Breakspear Road South and Land to south of Copthall Farm (CFA6) surveyed between 11 - 15 March 2013;
- Network Rail land from Breakspear Road to Harvil Road, Hillingdon (CFA6) surveyed between 12-14 November 2012;
- Land on the east side of Harvil Road and on the south-west side of Newyears Green Lane, Harefield, Hillingdon (CFA6) surveyed on 19 February 2013; and
- Copthall Covert and Shorthill Cottage, Hillingdon (CFA6) surveyed on 29 May 2013.

- 4.3.4 Sites where access for Phase 1 habitat survey was not permitted, but which were scoped where possible from Public Rights of Way (PRoW) include:
- St James's Garden (CFA1) scoped on 14 November 2012;
  - Rail land between Euston Rd A501 and Gloucester Avenue, Camden (CFA1) scoped on 4 July 2013;
  - Land lying within the Outer Circle and Inner Circle, Regent's Park, London (CFA1) scoped on 14 November 2012;
  - Rail land between York Way and Camley Street, Camden (CFA2) scoped on 4 July 2013;
  - Camden Locks (CFA2) scoped on 10 May 2013;
  - The site of an electricity sub-station at Camden Lock Place, London (CFA2) scoped on 10 May 2013;
  - Camden Gardens (CFA2) scoped on 10 May 2013;
  - Hampstead Tube – Alexandra Road vent shaft main compound (CFA3) scoped on 11 July 2013;
  - Park Tube – Claremont Road/ Salusbury Road vent shaft main compound (CFA4) scoped on 20 July 2013;
  - Willesden EuroTerminal main compound (CFA4) scoped between 11-15 March 2013;
  - Superstore at Atlas Road (CFA4) scoped between 8-10 April 2013;
  - Acton Wells area (CFA4) scoped between 8-10 April 2013;
  - North Acton Cemetery (CFA4) scoped between 8-10 April 2013;
  - Covered Water Mains adjacent to May Gardens (CFA5) scoped on 6 December 2012;
  - Ruislip Golf Course, Ickenham Road, Ruislip (CFA6) scoped on 29 May 2013;
  - Ickenham Stream, Ruislip (CFA6) scoped on 29 May 2013;
  - Ickenham Green (various areas south of the railway line, south of Ruislip Golf Course, including Ickenham Green, Mad Field Covert and playing fields, moat and allotment gardens) (CFA6) scoped on 29 May 2013;
  - River Pinn (CFA6) scoped on 29 May 2013; and
  - Land north of St Leonard's Farm and south of Bayhurst wood, and land to the south-west of Bayhurst Wood scoped on 5 and 9 August 2013.
- 4.3.5 In all other case interpretation of aerial photography has been used to provide an indication of the likely habitats present. Areas of specific interest where no access or views from PRoW were available include:

- Adelaide LNR (CFA<sub>3</sub>);
- Network Rail land between Gloucester Ave. and Primrose Hill Road (CFA<sub>3</sub>);
- Network Rail land at Old Oak Common Depot (CFA<sub>4</sub>);
- Network Rail land at Park Royal SBI (CFA<sub>4</sub> and CFA<sub>5</sub>);
- Land South of Carr Road (CFA<sub>5</sub>); and
- Land on the east side of Harvil Road, Ickenham including Newyears Green Covert (CFA<sub>6</sub>).

4.3.6 When surveying from PRow very little of the extensive Phase 1 protocol could be implemented. Only areas within uninterrupted lines of sight could be reliably identified, described and mapped, and large parts of some sites remain unsurveyed. It was not possible to walk over habitats to assess the species present and therefore the identity and character of the vegetation and habitat types. Some target notes could be written for features clearly visible and identifiable from roads or paths, but far fewer than in an extended Phase 1 Habitat Survey; and such target notes as could be written were often skeletal. Binoculars sometimes helped, but not always.

4.3.7 In the urban area, and in agricultural landscapes such as that of CFA<sub>6</sub>, the identification of habitat types from air photography presents fewer difficulties than it might in areas where there are extensive tracts of semi-natural vegetation e.g. bog, heath, rush pasture and acid grassland. Urban habitats and urban-fringe agricultural habitats generally occupy very discrete land parcels, so that there are few zones of transition between habitat types; and the range of likely habitat types is decidedly restricted. Nevertheless Phase 1 mapping from air photography in such areas has several limitations:

- woodland, scattered trees, scrub and ornamental shrubbery may be confused with one another, though it is easy to see from air photography that woody vegetation is present;
- this notwithstanding, the extent and shape of an area of woodland or scrub can often be determined more accurately from air photography than from a site visit even at extended Phase 1 Habitat Survey level (since sight lines at ground level are often blocked by scrub);
- vegetation types growing under trees or between scattered trees may be hard to identify;
- grassland types may be confused with one another - in urban parks for example it may be impossible to differentiate between mown amenity-turf and short but non-mown swards that are best placed in the semi-improved neutral grassland category; and
- habitat types that consist of sparse plants, e.g. the ephemeral ruderal type, will generally be altogether missed in mapping from air photography.

4.3.8 Site specific limitations include the following.

- At larger urban parks in CFA<sub>1</sub>, 2 and 3 mapping of grassland habitats depends on the current management regime. According to Phase 1 habitat definitions, amenity-turf must be mown; if it grows tall then it becomes semi-improved neutral grassland. The mapping of these two grassland habitat types may therefore depend on the mowing regime, and something mapped as semi-improved neutral grassland could change back to amenity-turf quite literally from one day to the next (though the opposite change could not), so that habitat mapping could depend on survey date. This consideration does not apply to agricultural grasslands towards the western end of the London Metropolitan section, which are semi-improved neutral grassland whether or not they are cut (e.g. for silage). It is principally a difficulty in major urban parks such as Wormwood Scrubs in CFA<sub>3</sub>, where large areas of grassland that would count as amenity-turf if they were mown are instead left to grow tall for wildlife purposes, though presumably they are cut from time to time, e.g. once each year or perhaps every second or third year.
- Further to the preceding, over several years of non-mowing management these amenity-turf swards can slowly acquire additional species that might permanently differentiate them from amenity-turf; but the Phase 1 habitat definitions provide no criteria for determining the point at which such a change might be effected. It is therefore very likely that individual surveyors will map these swards differently.
- At all sites surveyed in CFA<sub>1</sub>, Phase 1 Habitat Survey was undertaken in November, which is a poor time of year for assessing the quality of most herbaceous vegetation types, especially grassland. Relatively species-rich examples of amenity-turf and those that are allowed to grow tall in summer could have been missed.
- At the Roundhouse and Chalk Farm Road area in CFA<sub>2</sub>, Phase 1 Habitat Survey was carried out in November, which is a poor time of year for assessing the quality of most herbaceous vegetation types, especially grassland.
- At Kensal Green Cemetery in CFA<sub>4</sub>, the Phase 1 Habitat Survey in December may have failed to assess species-rich amenity-turf adequately.
- Particularly in CFA<sub>6</sub>, surveys in November, December or March at sites with grassland, water-margins etc. species compositions were hard to assess and important plants could have been missed in any habitat.
- Brackenbury House and Brackenbury Barn in CFA<sub>6</sub> were surveyed when snow was on the ground, which limited ability to identify vegetation.

## 4.4 Baseline

### CFA<sub>1</sub>

- 4.4.1 The CFA contains a predominantly built environment. Public greenspace mostly occurs in city squares, parks, public gardens, and amenity plantings around buildings. The largest single area of greenspace is Regent's Park. Towards Euston Station there is very little wildlife habitat in the railway corridor, but from simple observation of the

CFA the railway corridor to the west contains scattered wildlife habitat. Some greenspace is probably present in private gardens, but this resource cannot practicably be surveyed or mapped. The Grand Union Canal and a nature reserve (Camley Street Natural Park) lie at the outer edge of the Phase 1 mapping area, and are not discussed here.

### Scrub

- 4.4.2 Small patches of semi-ruderal scrub occur very locally in abandoned yards, strips of unused land between buildings, and similar places. From simple observation of the CFA, scrub occurs fragmentarily on railway line-sides towards the western edge of the CFA (though there is none in sections of the railway with high retaining walls on the Euston Station approaches).
- 4.4.3 The scrub in this inner urban area mostly consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings, especially the non-native tree-of-heaven (*Ailanthus altissima*). Many woody species occur in small numbers, being self-seeded or relict plants of the many woody species grown in the urban area including ornamental shrubs and trees, e.g. cherry laurel (*Prunus laurocerasus*) and native species of planted origin, e.g. pedunculate oak (*Quercus robur*).
- 4.4.4 Such scrub often grades into ruderal vegetation described below.

### Hedgerows

- 4.4.5 From simple observation, the CFA contains garden and park hedges consisting of garden privet (*Ligustrum ovalifolium*) or many other ornamental shrubs. They have been individually surveyed or mapped, and for Phase 1 mapping purposes it is arguable that they should in any case be treated as linear patches of ornamental shrubbery.

### Grassland

- 4.4.6 In St James's Garden there are small areas of grassland left to grow tall as an urban wildlife enhancement. If they were mown, these swards would probably differ little from the widespread amenity-turf swards in the area, though some may contain a modest range of dicotyledonous herbs. There may be similar swards in other city squares and parks mapped only from air photography. Parks gardens and open spaces are a Camden BAP Habitat
- 4.4.7 Under the habitat definitions for Phase 1 Habitat Survey, the lack of mowing technically removes these swards from the amenity-turf category, and places them in the semi-improved neutral grassland category; but they would move back to the amenity-turf category if mowing were to take place. None are mapped as there are no examples in places where full Phase 1 Habitat Survey has been carried out (often they are under trees).

### Ephemeral/short perennial

- 4.4.8 This habitat type - consisting of sparsely scattered ruderal plant species on such man-made substrates as turned earth, semi-hard surfaces (e.g. car parks, yards), cracked asphalt or concrete, and railway ballast - has not been recorded in the few full Phase 1 surveys carried out in this CFA; nor could it have been mapped from air photography

(see survey limitations). It is, however, a common habitat type in all urban areas, and it must be present in this CFA albeit in very fragmentary patches. It is impermanent, and may from time to time be sprayed with herbicides in those places with the greatest potential to support it, e.g. ballast areas on the operational railway. It is often species-rich though it consists of annual plant species including many non-natives, e.g. Guernsey fleabane (*Conyza sumatrensis*), hoary mustard (*Hirschfeldia incana*).

### *Buildings/structures*

- 4.4.9 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as butterfly-bush (*Buddleja davidii*), ferns such as hart's-tongue fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped.
- 4.4.10 Nevertheless railway brickwork in Camden (mostly Fletton rather than blue brick) does support around five fern species of which hart's-tongue fern (*Asplenium scolopendrium*) is the by far the most frequent; they also occur on a few brick buildings with leaking down-pipes. But few structures support more than the merest handful of individual ferns (except for patches of juveniles many of which would not survive to maturity) and are not of particular conservation interest.
- 4.4.11 The built environment is a Camden BAP Habitat.

### *Other habitats*

- 4.4.12 The single largest habitat resource in the CFA is the complex of amenity-turf, scattered (or not so scattered) trees, ornamental shrubbery, and flower beds, that is commonly found in city squares, urban parks, and amenity plantings around buildings. Parks gardens and open spaces are a Camden BAP Habitat. Leaving aside the large area of this habitat type in Regent's Park, the Phase 1 map for this CFA shows around 35 patches of amenity turf and scattered trees, variable in size, but mostly isolated from one another (though there are a few small clusters).
- 4.4.13 The amenity-turf is almost always dominated by the grass perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*) and creeping buttercup (*Ranunculus repens*), two species listed in Phase 1 habitat surveys for this CFA that could be found in almost any patch of amenity-turf in this CFA or anywhere else.
- 4.4.14 The scattered trees in this CFA are predominantly London plane (*Platanus ×hispanica*), but many other species occur locally, especially tree-of-heaven (*Ailanthus altissima*) and lime (*Tilia ×europaea*). Woodland, hedgerows and trees are a Camden BAP Habitat. Ornamental shrubbery is frequent and hugely varied. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in city squares constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.

## CFA<sub>2</sub>

- 4.4.15 The CFA contains a predominantly built environment. Public greenspace mostly occurs in city squares, parks, public gardens, and amenity plantings around buildings. The railway corridor and the Grand Union Canal corridor contain fragmentary wildlife habitat. Some greenspace is probably present in private gardens, but this resource cannot practicably be surveyed or mapped.

### Scrub

- 4.4.16 Small patches of scrub interspersed with ruderal vegetation occur very locally in abandoned yards, strips of unused land between buildings, and similar places. In this CFA they occur fragmentarily on railway line-sides, e.g. where Phase 1 survey was carried out at the Roundhouse and to a greater extent on rail land between Camley Street and York Way. Brownfield and railside are an Islington BAP Habitat.
- 4.4.17 The scrub in this inner urban area mostly consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings. Many woody species occur in small numbers, being self-seeded or relict plants of the many woody species grown in the urban area including ornamental shrubs and trees. What, however, more particularly characterises the fragmentary scrub in this CFA is its open character and its tendency to grade into short ephemeral vegetation. Where these two habitat types occur around the railway in this CFA they tend to be scarcely separable; rather they form a mosaic that might be regarded as a habitat type in its own right<sup>10</sup>, though it does not correspond to any habitat type defined in the Phase 1 survey system. Indeed much habitat here is intermediate in character (scattered ruderals with some Butterfly-bush bushes).
- 4.4.18 On the towpath of the Grand Union Canal and perhaps elsewhere, there is very mixed scrub consisting in part of planted ornamental shrubs. This tends to be open, and to form mosaics with rough grassland and tall-herb ruderal vegetation types. In places it may be hard to differentiate such scrub from ornamental shrubbery.

### Hedgerows

- 4.4.19 From simple observation, the CFA contains garden and park hedges consisting of garden privet (*Ligustrum ovalifolium*) or many other ornamental shrubs. None have been individually surveyed or mapped, and for Phase 1 mapping purposes it is arguable that they should in any case be treated as linear patches of ornamental shrubbery.

### Grassland

- 4.4.20 Along the towpath of the Grand Union Canal and perhaps fragmentarily elsewhere there are strips of weedy rough grassland variously dominated by perennial rye-grass (*Lolium perenne*) and cock's-foot (*Dactylis glomerata*) together with a wide range of dicotyledonous herb species typical of nutrient-rich trampled soils. These trampled swards grade into taller rough grassland on the side of the towpath away from the water. Though several grassland NVC types are potentially involved, in a Phase 1

<sup>10</sup> This is not the same line-side mosaic as the mosaic of scrub, rough grassland and tall-herb ruderal vegetation commonly found on line-sides in suburban and rural areas, and discussed here in later CFA.

Habitat Survey these grasslands can only be treated rather unsatisfactorily as semi-improved or unimproved neutral grasslands. They are in fact weedy grasslands of the kind that are ubiquitous on paths and roadsides throughout lowland Britain.

4.4.21 In city squares and parks mapped only from aerial photography, there could be small areas of grassland left to grow tall as an urban wildlife enhancement, though none were actually encountered in surveys. If they were mown, these swards would probably differ little from the widespread amenity-turf swards in the area, though some may contain a modest range of dicotyledonous herbs. Parks gardens and open spaces are a Camden BAP Habitat.

4.4.22 Under the habitat definitions for Phase 1 Habitat Survey, the lack of mowing technically removes these swards from the amenity-turf category, and places them in the semi-improved neutral grassland category; but they would move back to the amenity-turf category if mowing were to take place. None are mapped as there are no examples in places where full Phase 1 Habitat Survey has been carried out (often they are under trees).

### *Water bodies*

4.4.23 The Grand Union Canal in this CFA is a body of very slow-moving eutrophic fresh water with little if any aquatic vegetation and at the most very sparse water-margin vegetation, mainly in the form of dicotyledonous wetland herbs on the banks. Waterways and wetlands are a Camden BAP habitat.

4.4.24 A single pond, believed to be a balancing pond, is located adjacent to Freight Lane, Camden. The pond has not been subject to survey, but from PROW is surrounded by buddleia scrub and rough grassland.

4.4.25 The towpath supports mixed rough grassland, tall-herb ruderal and scrub habitat types in fragmentary mosaics as described in various preceding paragraphs.

### *Tall herb and fern*

4.4.26 Tall-herb ruderal vegetation containing species such as creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) is extremely common in urban areas, and therefore likely to be present patchily and in small quantity in areas mapped only from air photography.

### *Ephemeral/short perennial*

4.4.27 This habitat type, consisting of sparsely scattered ruderal plant species on such man-made substrates as turned earth, semi-hard surfaces (e.g. car parks, yards), cracked asphalt or concrete, and railway ballast, has occasionally been recorded in the few full Phase 1 surveys carried out in this CFA, but could not have been mapped from air photography (see survey limitations). It is, however, a common habitat type in all urban areas, and it must be present in this CFA albeit in very fragmentary patches. It is impermanent, and may from time to time be sprayed with herbicides. In this CFA it may be well-developed on the operational railway. It is often species-rich though it consists of annual plant species including many non-natives, e.g. Guernsey fleabane (*Conyza sumatrensis*), hoary mustard (*Hirschfeldia incana*).

### *Buildings/structures*

- 4.4.28 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as butterfly-bush (*Buddleja davidii*), ferns such as hart's-tongue fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped.
- 4.4.29 Nevertheless railway brickwork in Camden (mostly Fletton rather than blue brick) does support around five fern species of which hart's-tongue fern (*Asplenium scolopendrium*) is the by far the most frequent; they also occur on a few brick buildings with leaking down-pipes. But few structures support more than the merest handful of individual ferns (unless there are patches of juveniles many of which would not survive to maturity) and are not of particular conservation interest.
- 4.4.30 The built environment is a Camden BAP Habitat.

### *Other habitats*

- 4.4.31 The single largest habitat resource in the CFA is the complex of amenity-turf, scattered (or not so scattered) trees, ornamental shrubbery, and flower beds, that is commonly found in city squares, urban parks, and amenity plantings around buildings. Parks gardens and open spaces are a Camden BAP Habitat. The Phase 1 map for this CFA shows around 25 patches of amenity turf and scattered trees, variable in size, but mostly isolated from one another (though there are a few small clusters).
- 4.4.32 The amenity-turf is almost always dominated by the grass perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*) and creeping buttercup (*Ranunculus repens*).
- 4.4.33 The scattered trees in this CFA are predominantly London plane (*Platanus × hispanica*), but many other species occur locally, especially tree-of-heaven (*Ailanthus altissima*) and lime (*Tilia × europaea*). Woodland, hedgerows and trees are a Camden BAP Habitat. Ornamental shrubbery is frequent and hugely varied. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in city squares constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.
- 4.4.34 Several of the habitat types described above scrub, grassland, tall-herb ruderal vegetation and ephemeral/perennial vegetation, occur in complexes of mosaic and transition, especially on the railway land at North London Line SBI between Camley Street and York Way; it is common practice to describe them as single habitat types including:
- complexes of thorn scrub, bramble scrub, tall-herb ruderal vegetation and rough grassland with no bare ground on railway embankments; and
  - complexes of open buddleia scrub, open bramble scrub, species-rich rough grassland and ephemeral ruderal vegetation with plenty of bare ground on free-draining nutrient-poor substrates, especially railway ballast.

### CFA<sub>3</sub>

- 4.4.35 The CFA contains a predominantly built environment. Public greenspace mostly occurs in city squares, parks, public gardens, and amenity plantings around buildings. By far the most extensive area of such habitat is at Primrose Hill. The railway corridor and a short section of the Grand Union Canal corridor contain fragmentary wildlife habitat. Some greenspace is present in private gardens, but this resource cannot practicably be surveyed or mapped.

### Woodland

- 4.4.36 There is a small area of recent secondary woodland dominated by sycamore (*Acer pseudoplatanus*) on the railway embankment adjacent to the Adelaide LNR. In Phase 1 Habitat Survey this classifies as semi-natural broad-leaved woodland. Woodland, hedgerows and trees are Camden BAP habitats.

### Scrub

- 4.4.37 Though mapping from aerial photography in this CFA does not show scrub, from simple observation small patches of semi-ruderal scrub occur locally in abandoned yards, strips of unused land between buildings, and similar places. Scrub occurs fragmentarily on the railway line-sides. From desk study, there are patches of species-rich scrub, probably planted or at least enhanced at the Adelaide LNR.
- 4.4.38 The scrub in this inner urban area mostly consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings. Many woody species occur in small numbers, being self-seeded or relict plants of the many woody species grown in the urban area including ornamental shrubs and trees.
- 4.4.39 Such scrub often grades into ruderal vegetation described below.

### Hedgerows

- 4.4.40 From simple observation, the CFA contains garden and park hedges consisting of garden privet (*Ligustrum ovalifolium*) or many other ornamental shrubs. None have been individually surveyed or mapped, and for Phase 1 mapping purposes it is arguable that they should in any case be treated as linear patches of ornamental shrubbery.
- 4.4.41 A single planted hedgerow is reported within the management plan to be present at Adelaide LNR. The hedgerow is described as gappy, and comprises a number of non-native species, including Caucasian Oak (*Quercus macranthera*), Holm Oak (*Quercus ilex*) and Turkey Oak (*Quercus cerris*). This hedge has been planted in recent years, and so is unlikely to qualify as important under the Hedgerow Regulations 1997.

### Grassland

- 4.4.42 Along the towpath of the Grand Union Canal and perhaps fragmentarily elsewhere there are strips of weedy rough grassland variously dominated by perennial rye-grass (*Lolium perenne*) and cock's-foot (*Dactylis glomerata*) together with a wide range of dicotyledonous herb species typical of nutrient-rich trampled soils. These trampled swards grade into taller rough grassland on the side of the towpath away from the water. Though several grassland NVC types are potentially involved, in a Phase 1 Habitat Survey these grasslands can only be treated rather unsatisfactorily as semi-

improved or unimproved neutral grasslands. They are in fact weedy grasslands of the kind that are ubiquitous on paths and roadsides throughout lowland Britain.

- 4.4.43 From desk study there is also species-rich grassland at Adelaide LNR. Grassland and heath are a Camden BAP habitat.
- 4.4.44 In city squares and parks mapped only from aerial photography, there could be small areas of grassland left to grow tall as an urban wildlife enhancement, though none were actually encountered in surveys in this CFA. If they were mown, these swards would probably differ little from the widespread amenity-turf swards in the area, though some may contain a modest range of dicotyledonous herbs.
- 4.4.45 Under the habitat definitions for Phase 1 Habitat Survey, the lack of mowing technically removes these swards from the amenity-turf category, and places them in the semi-improved neutral grassland category; but they would move back to the amenity-turf category if mowing were to take place. None are shown in the Phase 1 mapping, which mostly derives from aerial photography in this CFA.

#### *Water bodies*

- 4.4.46 From desk study there are two small ponds at Adelaide LNR. Waterways and wetlands are a Camden BAP habitat.

#### *Tall herb and fern*

- 4.4.47 Tall-herb ruderal vegetation containing species such as creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) is extremely common in urban areas, and therefore likely to be present patchily and in small quantity in the extensive areas mapped only from aerial photography in this CFA.

#### *Ephemeral/short perennial*

- 4.4.48 This habitat type, consisting of sparsely scattered ruderal plant species on such man-made substrates as turned earth, semi-hard surfaces (e.g. car parks, yards), cracked asphalt or concrete, and railway ballast, is present on the railway, but could not have been mapped from aerial photography elsewhere (see survey limitations). It is, however, a common habitat type in all urban areas, and it must be present in this CFA albeit in very fragmentary patches. It is impermanent, and may from time to time be sprayed with herbicides. In this CFA it may be well-developed on the railway. It is often species-rich though it consists of annual plant species including many non-natives, e.g. Guernsey fleabane (*Conyza sumatrensis*), hoary mustard (*Hirschfeldia incana*).

#### *Buildings/structures*

- 4.4.49 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as butterfly-bush (*Buddleja davidii*), ferns such as hart's-tongue fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped. The built environment is a Camden BAP habitat.

### Other habitats

- 4.4.50 The single largest habitat resource in the CFA is the complex of amenity-turf, scattered (or not so scattered) trees, ornamental shrubbery, and flower beds that is commonly found in city squares, urban parks, and amenity plantings around buildings. By far the largest area in the CFA is at Primrose Hill. The Phase 1 map for this CFA otherwise shows around 25 patches of amenity turf and scattered trees. In this CFA, by contrast with CFAs 1 and 2, they are mostly in local clusters. Extensive areas between the clusters therefore altogether lack public greenspaces, especially in the central part of the CFA. Parks, gardens and open spaces are a Camden BAP habitat.
- 4.4.51 The amenity-turf is almost always dominated by the grass perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*) and creeping buttercup (*Ranunculus repens*).
- 4.4.52 The scattered trees in this CFA are predominantly London plane (*Platanus × hispanica*), but many other species must occur locally, e.g. lime (*Tilia × europaea*). From simple observation, ornamental shrubbery, though not mapped from aerial photography, must be present. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in city squares constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.

### CFA4

- 4.4.53 The eastern part of the CFA contains a predominantly built environment, comprising the Queens Park and Kilburn areas. Public greenspace mostly occurs in parks, public gardens, and amenity plantings around buildings; and greenspace must also be present in private gardens though this resource cannot practicably be surveyed or mapped. By contrast the western part of the CFA contains extensive light industrial areas with fragmentary brown-field land. The Old Oak Common railway depot and associated railway corridors contain wildlife habitat as does the Grand Union Canal corridor. There is a major open space at Wormwood Scrubs, and there are also several large cemeteries.

### Woodland

- 4.4.54 There is one patch of recent secondary woodland on former rail land between the Old Oak Common depot and the Grand Union Canal. This is birch woodland that regenerated naturally on railway ballast. It is strongly dominated in the canopy by silver birch (*Betula pendula*), and the field-layer contains sparse bramble (*Rubus fruticosus* agg.) together with a mixture of shade-tolerant plant species and ruderals surviving from the former short ephemeral vegetation in which the birch trees grew up.
- 4.4.55 Although not accessible for survey, desk study data and views of railside land to the west of Old Oak Common (within Acton Railside SBI.1) from PRoW indicate areas of naturally regenerating scrub which is extensively growing up into secondary woodland. This area may qualify as woodland in the Phase 1 scheme of habitat definitions on account of the height (over 5m) and density (over 30% cover) of the saplings. Woodland (including scrub) is an Ealing BAP habitat.

- 4.4.56 This is likely to be similar to other railside secondary woodland described in this report. The canopy layer is likely to include sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*), ash (*Fraxinus excelsior*) and wild cherry (*Prunus avium*), and the shrub-layer is likely to include hawthorn (*Crataegus monogyna*) and bramble (*Rubus fruticosus* agg.), other species including garden-escapes such as Himalayan cotoneaster (*Cotoneaster simonsii*), are also likely to be present. Where the canopy is dense, the field-layers are likely to be sparse, containing ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg.) and an impoverished grassland flora.
- 4.4.57 Otherwise all woodland in the CFA is plantation woodland of one form or another. It is mostly recently planted, consisting of young trees up to about 20 years old that can reach heights of up to about 10m, though they are most are less than that. There are, however, a few areas of more mature plantation woodland:
- in Wormwood Scrubs Park there is mature plantation consisting of ash (*Fraxinus excelsior*) and mostly non-native trees including horse-chestnut (*Aesculus hippocastanum*), Turkey oak (*Quercus cerris*); and
  - on one stretch of the northern side of the Grand Union Canal a dense line of tall and fully mature trees barely amounts to a woodland strip, which includes several species, especially sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and grey poplar (*Populus xcanescens*).
- 4.4.58 The more recent plantation woodlands are mainly at Wormwood Scrubs where they fringe the edges of the site, especially to the north and east and also occur as islands amongst the grass swards, especially towards the eastern side of the site. They consist of extremely diverse tree-planting stock amongst which fast-growing species predominate. Among the most commonly planted canopy (or future canopy) species are field maple (*Acer campestre*), silver birch (*Betula pendula*), ash (*Fraxinus excelsior*), wild cherry (*Prunus avium*) and pedunculate oak (*Quercus robur*); while shrubs include hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) - but many additional species are present. Small variations in the proportions of these species and the additional species give slightly different characteristics to each patch of plantation. They have a more distinctly different character where poplars, mostly white poplar (*Populus alba*) and aspen (*Populus tremula*), are dominant in the canopy species plantings. The plantings are mostly dense so that deep shading precludes, beneath these young canopies at least, any extensive development of a woodland field layer.
- 4.4.59 Trees, hedgerows and woodland are a Hammersmith and Fulham BAP habitat.
- Scrub*
- 4.4.60 Many of the plantings in Wormwood Scrubs look like scrub as they consist of shrubs, e.g. hawthorn (*Crataegus monogyna*), with young tree saplings over-topping. The same applies at Little Wormwood Scrubs and in places along the Grand Union Canal. Whether they count as woodland or scrub in the scheme of the Phase 1 Habitat Survey depends on the height of the trees, and many of these plantings are borderline cases. Tree saplings are, very seldom totally lacking. These stands will become woodland,

and if they just scrape into the scrub category for now, they will not do so for much longer.

- 4.4.61 There are, however, places among the plantings where bramble (*Rubus fruticosus* agg.) is dominant. Even here tree saplings are generally growing through, but where the saplings are sparse the habitat can be regarded as scrub. This type of scrub tends to occur in mosaic and transition with stands that have more abundant and taller tree saplings, so that it may not be possible to show it as scrub on Phase 1 maps.
- 4.4.62 Naturally regenerating thorn scrub dominated by bramble (*Rubus fruticosus* agg.) and hawthorn (*Crataegus monogyna*) occurs only fragmentarily and in small quantity in this CFA, mostly around the edges of the parks, along the banks of the Grand Union Canal, and on the wider railway line-sides around line intersections east of Old Oak Common depot. Often the presence of butterfly-bush (*Buddleja davidii*) and elder (*Sambucus nigra*) indicates a somewhat ruderal character.
- 4.4.63 Though mapping from aerial photography may not show it, small patches of semi-ruderal scrub must occur locally in abandoned yards, strips of unused land between buildings, and similar places. This scrub together with ruderal scrub on the operational railway mostly consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings. Such scrub often grades into ephemeral ruderal vegetation described below.
- 4.4.64 Scrub is mostly lacking from the large cemeteries in this CFA owing to maintenance. Old ornamental shrubbery might be regarded as scrub by some people, but does not qualify in the scheme of Phase 1 Habitat Survey.
- 4.4.65 The mosaics of thorn scrub, bramble scrub, rough grassland and tall-herb ruderal vegetation that predominate on railway line-sides in the suburbs are here represented in the Park Royal SINC and to a lesser extent east of Old Oak Common depot.

### *Hedgerows*

- 4.4.66 The cemeteries in this CFA contain hedges consisting of garden privet (*Ligustrum ovalifolium*) and evergreen shrubs, both broad-leaved, e.g. escallonia (*Escallonia* species), holly (*Ilex aquifolium*) or cherry laurel (*Prunus laurocerasus*) and coniferous e.g. Lawson's cypress (*Chamaecyparis lawsoniana*), yew (*Taxus baccata*). Both within the cemeteries and any other areas in this CFA, for Phase 1 mapping purposes it is arguable that they should be treated as linear patches of ornamental shrubbery.
- 4.4.67 Trees, hedgerows and woodland is a Hammersmith and Fulham BAP habitat

### *Grassland*

- 4.4.68 At Wormwood Scrubs (and also Little Wormwood Scrubs) the grasslands are largely amenity-turf described below. There are, however, extensive stands of less intensively managed grassland (less frequently mown) that qualify as the Phase 1 habitat type semi-improved grassland. Though no rough grasslands closely match the Phase 1 descriptions of semi-improved (or unimproved) grasslands, they are clearly not amenity-turf, and there is no other Phase 1 category to put them in. At Wormwood Scrubs these swards tend to be dominated by coarse grasses, especially false oat-grass (*Arrhenatherum elatius*) and cock's-foot (*Dactylis glomerata*) together with

smaller grasses, especially common bent (*Agrostis capillaris*) and red fescue (*Festuca rubra*). The characteristic grass of amenity-turf, perennial rye-grass (*Lolium perenne*), is often present but in relatively small quantities. A modest range of dicotyledonous herbs also occur in the swards, including some that might be found in amenity-turf, e.g. yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), creeping cinquefoil (*Potentilla reptans*), creeping buttercup (*Ranunculus repens*), together with larger species that would not, e.g. chalk knapweed (*Centaurea debeauxii*), wild carrot (*Daucus carota* ssp. *carota*). In some stands there are additionally tall semi-ruderal herbs, e.g. creeping thistle (*Cirsium arvense*), hogweed (*Heracleum sphondylium*). The character of the sward varies principally according to the abundance of the coarse grasses; those dominated by the smaller grasses are more likely to be rich in dicotyledonous herbs.

- 4.4.69 Other rough grasslands dominated by false oat-grass (*Arrhenatherum elatius*) or cock's-foot (*Dactylis glomerata*) occur widely but fragmentarily and in small quantity in this CFA, e.g. along the towpath of the Grand Union Canal, on railway land east and west of the Old Oak Common depot, and here and there in the industrial area north of the canal. In these swards tall semi-ruderal herbs are usually prominent. They occur for example by the Grand Union Canal in gaps in an area of scrub enhanced by tree-planting. Here tall semi-ruderal herbs such as cow parsley (*Anthriscus sylvestris*), mugwort (*Artemisia vulgaris*) and broad-leaved dock (*Rumex obtusifolius*) are complemented by colourful flowers doubtless introduced in wild-flower seed-mixtures, e.g. meadow crane's-bill (*Geranium pratense*).
- 4.4.70 By the towpath of the Grand Union Canal and elsewhere there are strips of weedy rough grassland derived from amenity-turf and variously dominated by perennial rye-grass (*Lolium perenne*) and cock's-foot (*Dactylis glomerata*) together with a wide range of dicotyledonous herb species typical of nutrient-rich trampled soils. These trampled swards grade into taller rough grassland on the side of the towpath away from the water. Though several grassland NVC types are potentially involved, in a Phase 1 Habitat Survey these grasslands can only be treated rather unsatisfactorily as semi-improved or unimproved neutral grasslands. They are in fact weedy grasslands of the kind that are ubiquitous on paths and roadsides throughout lowland Britain.
- 4.4.71 By the towpath of the Grand Union Canal there are again narrow strips of species-rich grassland intermediate in character between amenity-turf, which they resemble in being closely mown, and semi-improved grassland, which they resemble in having a wide range of dicotyledonous herbs. In these swards perennial rye-grass (*Lolium perenne*) grows with mown coarse grasses, especially false oat-grass (*Arrhenatherum elatius*) and cock's-foot (*Dactylis glomerata*), and smaller grasses, especially common bent (*Agrostis capillaris*) and red fescue (*Festuca rubra*). The amplified range of dicotyledonous herbs includes the common species of amenity-turf, e.g. greater plantain (*Plantago major*), white clover (*Trifolium repens*) together with several additional species, e.g. lady's bedstraw (*Galium verum*), cat's-ear (*Hypochaeris radicata*) and common bird's-foot-trefoil (*Lotus corniculatus*).
- 4.4.72 Amenity-turf in Wormwood Scrubs and elsewhere is generally dominated by perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*) and creeping buttercup

(*Ranunculus repens*). However, some swards do contain additional grass species, so that they are transitional to the rough grassland swards described above.

- 4.4.73 In the cemeteries, especially Kensal Green Cemetery, old amenity-turf may be especially rich in dicotyledonous herbs including species not all that widespread in the inner city.
- 4.4.74 Parks, gardens, city squares, school grounds, churchyards and cemeteries is a Royal Borough of Kensington and Chelsea BAP<sup>11</sup> habitat. Kensal Green Cemetery is a Flagship Site in the Royal Borough of Kensington and Chelsea BAP.

### *Wetlands*

- 4.4.75 On the northern side of the Grand Union Canal there are just a few small water-margin stands of such reed-swamp plant species as reed sweet-grass (*Glyceria maxima*) and yellow iris (*Iris pseudacorus*), perhaps planted. Particularly frequent in this vegetation is the large dicotyledonous herb hemlock water-dropwort (*Oenanthe crocata*). The invasive species Japanese knotweed (*Fallopia japonica*) is present in patches on drier ground throughout the stretch surveyed.

### *Water bodies*

- 4.4.76 The Grand Union Canal in this CFA is a body of very slow-moving eutrophic fresh water. Here it does support submerged stands of aquatic plants, e.g. Nuttall's waterweed (*Elodea nuttallii*), fennel pondweed (*Potamogeton pectinatus*). There is very sparse water-margin vegetation, mainly in the form of dicotyledonous wetland herbs on the banks, though a few reed-swamp stands are described above.
- 4.4.77 The Grand Union Canal is a Hammersmith and Fulham BAP habitat. Freshwater habitats and green corridors are Royal Borough of Kensington and Chelsea BAP habitats.
- 4.4.78 The towpath supports mixed rough grassland, tall-herb ruderal and scrub habitat types in fragmentary mosaics as described in various preceding paragraphs.

### *Tall herb and fern*

- 4.4.79 Tall-herb ruderal vegetation containing species such as creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) is scattered patchily and in small quantity around the edges of the open spaces, and along the Grand Union Canal corridor. It is likely to be present in the areas mapped only from aerial photography in this CFA.

### *Ephemeral/short perennial*

- 4.4.80 This habitat type, consisting of sparsely scattered ruderal plant species on such man-made substrates as turned earth, semi-hard surfaces (e.g. car parks, yards), cracked asphalt or concrete, and railway ballast, is present on the railway, but could not have been mapped from aerial photography elsewhere (see survey limitations). It is, however, a common habitat type in all urban areas, and it must be present in this CFA albeit in very fragmentary patches. It is impermanent, and may from time to time be

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<sup>11</sup> The Royal Borough of Kensington and Chelsea, *Local biodiversity Action Plan*, Available from: <http://www.rbkc.gov.uk/environmentandtransport/ecology/localbiodiversityactionplan.aspx>.

sprayed with herbicides. In this CFA it may be well-developed on the operational railway where it is characterised by the annual grass rat's-tail fescue (*Vulpia myuros*). It is often species-rich though it consists of annual plant species including many non-natives, e.g. Guernsey Fleabane (*Conyza sumatrensis*), Hoary Mustard (*Hirschfeldia incana*).

### *Buildings/structures*

- 4.4.81 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as butterfly-bush (*Buddleja davidii*), ferns such as hart's-tongue fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped.

### *Other habitats*

- 4.4.82 The single largest habitat resource in the built-up eastern part of the CFA is the complex of amenity-turf, scattered (or not so scattered) trees, ornamental shrubbery, and flower beds that is commonly found in urban parks, and amenity plantings around buildings. By far the largest area in the CFA is at Primrose Hill. The Phase 1 map for this CFA otherwise shows around 10 patches of amenity turf and scattered trees, of which by far the largest is at Queens Park.
- 4.4.83 The amenity-turf is almost always dominated by the grass perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*) and creeping buttercup (*Ranunculus repens*).
- 4.4.84 Scattered trees and street trees in this CFA belong to many species. Wormwood Scrubs Park is known to support a wider variety of native and non-native tree species. Species recorded in the plantations include ash (*Fraxinus excelsior*), wild cherry (*Prunus avium*), hawthorn (*Crataegus monogyna*), hybrid black-poplar (*Populus x canadensis*), London plane (*Platanus x hispanica*), and false-acacia (*Robinia pseudoacacia*).
- 4.4.85 Trees, hedgerows and woodland is a Hammersmith and Fulham BAP habitat. Parks, gardens, city squares, school grounds, churchyards and cemeteries is a Royal Borough of Kensington and Chelsea BAP habitat. Little Wormwood Scrubs is a Flagship Site in the Royal Borough of Kensington and Chelsea BAP.
- 4.4.86 Ornamental shrubbery though not mapped from aerial photography is widely present. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in city squares constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.
- 4.4.87 Several of the habitat types described above; woodland, scrub, grassland, tall-herb ruderal vegetation and ephemeral/perennial vegetation, occur in complexes of mosaic and transition, especially on the railway, so that it is common practice to describe them as single habitat types including:
- complexes of thorn scrub, bramble scrub, tall-herb ruderal vegetation and rough grassland with no bare ground on railway embankments;

- complexes of open buddleia scrub, open bramble scrub, species-rich rough grassland and ephemeral ruderal vegetation with plenty of bare ground on free-draining nutrient-poor substrates, especially railway ballast; and
- complexes of open ruderal scrub, eutrophic (nettle-bed) or mixed (thistle-bed) tall-herb ruderal vegetation, and ephemeral ruderal vegetation with or without bare ground around the edges of yards and industrial sites.

4.4.88 Railway land and corridors is a Hammersmith and Fulham BAP habitat. Railway land, while not identified as a local BAP habitat, has a Habitat Statement within the Ealing BAP<sup>12</sup>, and woodland (including scrub) is an Ealing BAP habitat.

### CFA<sub>5</sub>

4.4.89 This CFA contains a mixture of suburban residential development, light industrial areas, small urban parks, and larger open spaces, some of which contain survivals of the kind of woodland and grassland habitats that might be expected in more rural areas. It contains significant amounts of wildlife habitat along the corridors of the railway, the Grand Union Canal at Greenford, and the River Brent. Towards the western edge of the CFA at Northolt there are some surviving agricultural paddocks and fields.

### Woodland

4.4.90 Perivale Wood is a block of semi-natural broad-leaved woodland dominated in the canopy by standard trees of pedunculate oak (*Quercus robur*) over a shrub-layer that comprises small coppice stools of hazel (*Corylus avellana*) and holly (*Ilex aquifolium*). A mostly species-poor field-layer is strongly dominated by bramble (*Rubus fruticosus* agg.) with bluebell (*Hyacinthoides non-scripta*) in spring. More species-rich field-layers are locally present on banks towards the edges of the wood, and there are some ancient woodland indicator species, e.g. wood millet (*Milium effusum*). Woodland (including Scrub) is an Ealing BAP Habitat. Perivale Wood is also qualifies as Section 41 NERC Act habitat of principal importance: lowland mixed deciduous woodland.

4.4.91 On the southern side of Perivale Wood there is also an area of wet woodland dominated in the canopy by aspen (*Populus tremula*) with grey willow (*Salix cinerea* ssp. *oleifolia*) and crack willow (*Salix ×fragilis*) in the shrub-layer.

4.4.92 Mature secondary woodland also occurs in the corridor of the River Brent south of Westway, but it has not been surveyed in detail.

4.4.93 Naturally regenerating scrub on the railway is extensively growing up into secondary woodland. Large areas on the railway qualify as woodland in the Phase 1 scheme of habitat definitions on account of the height (over five meters) and density (over 30% cover) of the saplings, e.g. at Hangar Lane Station. These woods are mostly dominated in the canopy by pedunculate oak (*Quercus robur*), but other species are locally prominent including sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*), ash (*Fraxinus excelsior*) and wild cherry (*Prunus avium*). The shrub-layer is generally dominated by hawthorn (*Crataegus monogyna*) and bramble (*Rubus*

<sup>12</sup> Ealing Council (1999), *Biodiversity Action Plan*, Available from: [http://www.ealing.gov.uk/info/200588/nature\\_conservation/630/biodiversity\\_action\\_plan](http://www.ealing.gov.uk/info/200588/nature_conservation/630/biodiversity_action_plan).

*fruticosus* agg.), but many other species occur in small quantity, including garden-escapes such as Himalayan cotoneaster (*Cotoneaster simonsii*). Owing to deep-shade, the field-layers are often sparse, containing ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg.) and an impoverished grassland flora surviving from before the trees grew up.

### Scrub

- 4.4.94 Thorn scrub dominated by hawthorn (*Crataegus monogyna*) is abundant on the railway line-sides in this CFA. It forms mosaic and transition with lower-growing but often dense scrub dominated by bramble (*Rubus fruticosus* agg.). It usually contains saplings of tree species such as ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*), and may contain additional shrubs such as blackthorn (*Prunus spinosa*) and dog-rose (*Rosa canina*). Locally there are garden-escapes such as Himalayan cotoneaster (*Cotoneaster simonsii*). Beneath older hawthorn (*Crataegus monogyna*), field-layers are commonly reduced to a scatter of ivy (*Hedera helix*) or may be bare of vegetation, but in more open scrub bramble (*Rubus fruticosus* agg.) and grassland forbs may survive in reduced quantity.
- 4.4.95 On the railway, and especially on disused sidings, ruderal scrub dominated by butterfly-bush (*Buddleja davidii*) is locally abundant. Tree and shrub saplings occur sparsely, but this open scrub often has species-rich ruderal field-layers, which are described below. Partly planted scrub intermediate in character between this ruderal scrub and the thorn scrub described above occurs locally, e.g. a small park adjacent to River Brent at the River Island headquarters.
- 4.4.96 Though mapping from aerial photography may not show it, from simple observation small patches of semi-ruderal scrub must also occur locally in abandoned yards, strips of unused land between buildings, and similar places. This ruderal scrub likewise consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings. Such scrub often grades into ephemeral ruderal vegetation described below.

### Hedgerows

- 4.4.97 Though mapping from aerial photography may not show it, a few native-species hedgerows exist around gardens and allotments in this CFA, e.g. at Brentham Meadows, and possibly around fields at the western edge. Hedgerows are an Ealing BAP Habitat, although Ealing only retains a few hedgerows from its original farmland system<sup>13</sup>. From simple observation of the urban area, all other hedges are likely to be species-poor hedges of hawthorn (*Crataegus monogyna*), and by reason of their association with gardens or non-agricultural land they would fall outside the remit of the Hedgerow Regulations 1997.
- 4.4.98 The CFA contains many garden and park hedges consisting of Garden Privet (*Ligustrum ovalifolium*) or many other ornamental shrubs. Again there are many 'leylandii' hedges normally consisting of Lawson's cypress (*Chamaecyparis*

<sup>13</sup> Ealing Council (1999), *Biodiversity Action Plan*, Available from: [http://www.ealing.gov.uk/info/200588/nature\\_conservation/630/biodiversity\\_action\\_plan](http://www.ealing.gov.uk/info/200588/nature_conservation/630/biodiversity_action_plan).

*lawsoniana*). None have been individually surveyed or mapped, and for Phase 1 mapping purposes it is arguable that they should in any case be treated as linear patches of ornamental shrubbery.

### Grassland

- 4.4.99 At the Perivale Wood Site of Metropolitan Importance (SMI) the main woodland block is separated from the railway by small fields that contain mesotrophic agricultural grassland dominated by grasses such as Common Bent (*Agrostis capillaris*) and Perennial Rye-grass (*Lolium perenne*) in association with common grassland forbs among which Lesser Hawkbit (*Leontodon saxatilis*) is abundant. There are marginal signs of agricultural improvement, but it is at the very least good semi-improved grassland and perhaps unimproved grassland. Neutral, marshy and amenity grasslands are all Ealing BAP habitats.
- 4.4.100 On the railway there are stands of rough grassland strongly dominated by false oat-grass (*Arrhenatherum elatius*) from mosaics bramble scrub and ephemeral ruderal vegetation. Though other coarse grasses such as cock's-foot (*Dactylis glomerata*) are often present, this grassland is often less mixed than rough grassland types described in CFAs to the east. A few large semi-ruderal herbs such as common michaelmas-daisy (*Aster ×salignus*) are frequent, and a wide range of smaller grasses, especially red fescue (*Festuca rubra*), and many grassland forbs can occur at varying levels of abundance. Occasionally the red fescue dominates, but examples of this recorded in the Phase 1 surveys seem to be planted swards containing forbs that are commonly included in wild-flower seed-mixtures, e.g. wild carrot (*Daucus carota* ssp. *carota*), lady's bedstraw (*Galium verum*), oxeye daisy (*Leucanthemum vulgare*).
- 4.4.101 By the towpath of the Grand Union Canal and elsewhere there are strips of weedy rough grassland derived from amenity-turf and variously dominated by perennial rye-grass (*Lolium perenne*) and cock's-foot (*Dactylis glomerata*) together with a wide range of dicotyledonous herb species typical of nutrient-rich trampled soils, e.g. greater plantain (*Plantago major*). Similar swards are described under CFA4.
- 4.4.102 By the towpath of the Grand Union Canal there are again narrow strips of species-rich grassland intermediate in character between amenity-turf, which they resemble in being closely mown, and semi-improved grassland, which they resemble in having a wide range of dicotyledonous herbs. Similar swards are described under CFA4.
- 4.4.103 Amenity-turf around buildings, e.g. at Greenpark Way Industrial Park, and elsewhere is generally dominated by perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*) and creeping buttercup (*Ranunculus repens*). However, some swards do contain additional grass species, so that they are transitional to the rough grassland swards described above, and it is the regime of close-mowing management that identifies them as amenity-turf.

### Swamp

- 4.4.104 In the angle between the northern side of the railway and the western side of the Grand Union Canal at Greenford there is a small area of reed-swamp strongly dominated by common reed (*Phragmites australis*). Similar reed-swamp vegetation

here borders the western side of the canal itself. Reed Beds are an Ealing BAP Habitat and it may qualify as HoPI, Reedbed.

- 4.4.105 Open areas in wet woodland in the southern part of Perivale Wood contain reed-swamp mostly dominated by reed canary-grass (*Phalaris arundinacea*) together with such tall species as common michaelmas-daisy (*Aster ×salignus*), greater pond-sedge (*Carex riparia*) and great willowherb (*Epilobium hirsutum*).

### Watercourses

- 4.4.106 The River Brent is a relatively wide (around six meters) but shallow river in a partly straightened and engineered channel. South of Westway it is lined and shaded by trees, and had shade-tolerant herbs typical of damp eutrophic sites on the banks, while north of Westway steep and high banks are covered in dense, eutrophic, tall-herb ruderal vegetation (with brambles and scattered bushes) that includes invasives such as *Fallopia japonica* (Japanese Knotweed) and *Heracleum mantegazzianum* (Giant Hogweed). From limited views from PRoW, the river does not appear to support aquatic vegetation, but no survey has been carried out to confirm. Rivers and streams are an Ealing BAP Habitat, and this river may qualify as a HoPI if it supports NERC Act Section 41 priority species.

### Water bodies

- 4.4.107 The Grand Union Canal in this CFA is a body of very slow-moving eutrophic fresh water. Here it does support submerged stands of aquatic plants, e.g. Nuttall's waterweed (*Elodea nuttallii*). There is sparse water-margin vegetation, mainly in the form of dicotyledonous wetland herbs on the banks, though a few reed-swamp stands are described above. Canals are an Ealing BAP Habitat.
- 4.4.108 The towpath supports mixed rough grassland, tall-herb ruderal, scrub and in ditches reed-swamp habitat types in fragmentary mosaics as described in preceding paragraphs.
- 4.4.109 There are several small (and inter-linked) ponds surrounded by reed-swamp vegetation and wet woodland (described above) south of Perivale Wood, a pond with extensive water-margin vegetation in grassland at Brentham Meadows, and two ponds within Islip Manor LNR. Ponds are an Ealing BAP Habitat. Desk study data reports the ponds at Islip Manor LNR supported great crested newt. It is assumed, as the habitat is still present, that this species are still present. As these ponds are considered to support Section 41 (formerly UK BAP species) they qualify as HoPI.

### Tall herb and fern

- 4.4.110 On the railway there are stands of tall ruderal vegetation in mosaic with scrub and grassland. They fall into several types:
- those dominated by rosebay willowherb (*Chamerion angustifolium*);
  - strongly eutrophic stands dominated by common nettle (*Urtica dioica*);
  - mixed stands with such species as mugwort (*Artemisia vulgaris*), creeping thistle (*Cirsium arvense*), broad-leaved dock (*Rumex obtusifolius*) and common nettle (*Urtica dioica*); and

- they are all liable to grade into bramble scrub on the one hand and ephemeral ruderal vegetation on the other. There are also a few stands of bracken (*Pteridium aquilinum*).

- 4.4.111 Tall-herb ruderal vegetation containing species such as creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) is also scattered patchily and in small quantity around the edges of open spaces, industrial yards, roadsides, and the Grand Union Canal corridor. It is likely to be present in the areas mapped only from aerial photography in this CFA. There is a large stand of very mixed and therefore relatively species-rich ruderal vegetation belonging to this category in a small park adjacent to River Brent at the River Island headquarters (where it forms a mosaic with planted scrub).
- 4.4.112 North of the railway, the steep banks of the River Brent have dense stands of strongly eutrophic tall-herb ruderal vegetation containing common nettle (*Urtica dioica*) and great willowherb (*Epilobium hirsutum*) together with alien invasive species including Japanese knotweed (*Fallopia japonica*), giant hogweed (*Heracleum mantegazzianum*) and Indian Balsam (*Impatiens glandulifera*) as well as bramble (*Rubus fruticosus* agg.).

#### *Ephemeral/short perennial*

- 4.4.113 On railway ballast substrates, e.g. disused sidings, species-rich ephemeral ruderal vegetation commonly consists of mixtures of fine-leaved grasses, especially rat's-tail fescue (*Vulpia myuros*) and red fescue (*Festuca rubra*) and a wide range of dicotyledonous herbs among which the more characteristic species are common michaelmas-daisy (*Aster ×salignus*), hoary mustard (*Hirschfeldia incana*), common toadflax (*Linaria vulgaris*), black medick (*Medicago lupulina*) and hawkweed oxtongue (*Picris hieracioides*). Though not necessarily all that frequent here, especially characteristic of railway ballast is pale toadflax (*Linaria repens*). These assemblages range from very open stands on bare ballast, often featuring the more ephemeral species, e.g. sticky groundsel (*Senecio viscosus*), to closed stands grading into adjacent rough grasslands. In places the presence of such species as wild carrot (*Daucus carota* ssp. *carota*), oxeye daisy (*Leucanthemum vulgare*), common bird's-foot-trefoil (*Lotus corniculatus*) and wild marjoram (*Origanum vulgare*) suggests deliberate introduction of species by means of wild-flower seed-mixtures, perhaps on nearby land from which they have spread to the railway.
- 4.4.114 Similar vegetation occurs fragmentarily at the edges of light industrial sites and similar places, including a small park adjacent to River Brent at the River Island headquarters.

#### *Buildings/structures*

- 4.4.115 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as Butterfly-bush (*Buddleja davidii*), ferns such as Hart's-tongue Fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped.

### Other habitats

- 4.4.116 Several of the habitat types described above occur in such complex mosaic and transition, especially on the railway, that it is common practice to describe them as single habitat types including:
- complexes of thorn scrub, bramble scrub, tall-herb ruderal vegetation and rough grassland with no bare ground on railway embankments;
  - complexes of open buddleia scrub, open bramble scrub, species-rich rough grassland and ephemeral ruderal vegetation with plenty of bare ground on free-draining nutrient-poor substrates, especially railway ballast;
  - complexes of open ruderal scrub, eutrophic (nettle-bed) or mixed (thistle-bed) tall-herb ruderal vegetation, and ephemeral ruderal vegetation with or without bare ground around the edges of yards and industrial sites; and
  - Railway land, while not identified as a local BAP Habitat, has a Habitat Statement within the Ealing BAP.
- 4.4.117 Scattered trees and street trees in this CFA belong to many species. Ornamental shrubbery though not mapped from aerial photography is widely present. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in some parks constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.

### CFA6

- 4.4.118 This CFA contains predominantly agricultural land between Harvill Road and the River Pinn, and predominantly outer suburban residential development to the east of the River Pinn, though there are large areas of open fields south of the railway and west of the Yeading Brook, and south of the railway at the eastern edge of the CFA, while Ruislip Golf Course provides a large open space north of the railway and east of the River Pinn. There are, however, many other complexes of green space comprising, fragmentary woodland, trees, scrub, grassland and amenity-turf in the residential areas, e.g. the corridor of the River Pinn south of the railway, the Ickenham Green area. East of the Yeading Brook, these increasingly acquire more of an amenity-turf character. The railway represents an extensive resource of wildlife habitat, and towards the east of the CFA it is the principal wildlife resource in light industrial areas.

### Woodland

- 4.4.119 Bayhurst Wood comprises one of the largest unbroken blocks of ancient semi-natural broad-leaved woodland remaining in Greater London. The woodland was not surveyed, as access was not arranged. From desk study<sup>14</sup> this varied woodland predominantly comprises old sessile oak (*Quercus petraea*) coppice-with-standards, and hornbeam (*Carpinus betulus*) coppice, though there are also transitions to sessile oak (*Quercus petraea*) and beech (*Fagus sylvatica*) woodland. The ground flora

<sup>14</sup> Natural England (2013), *Ruislip Woods Site of Special Scientific Interest*, Accessed from: [http://www.sssi.naturalengland.org.uk/special/sssi/details.cfm?sssi\\_id=1003633](http://www.sssi.naturalengland.org.uk/special/sssi/details.cfm?sssi_id=1003633).

includes some locally uncommon species, though it is sparse under the deep shade of the hornbeam. This woodland qualifies as a Section 41 habitat of principal importance<sup>15</sup> lowland mixed deciduous woodland. Woodland is Hillingdon local BAP habitat.

- 4.4.120 Semi-natural broad-leaved woodland occurs little in the agricultural west of the CFA, principally at Copthall Covert. It also occurs very fragmentarily, mostly as lines of trees in places such as the corridor of the River Pinn south of the railway and Ickenham Green. It is mostly secondary woodland. At Copthall Covert the canopy is variously dominated by standards of ash (*Fraxinus excelsior*) or pedunculate oak (*Quercus robur*) with only a few other species in small quantity, e.g. field maple (*Acer campestre*). A mixed shrub-layer mostly consists of hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*) and elder (*Sambucus nigra*). The field-layer mostly consists of tall and dense bramble (*Rubus fruticosus* agg.), but a modest range of shade-tolerant herbs, e.g. cleavers (*Galium aparine*), bluebell (*Hyacinthoides non-scripta*), three-nerved sandwort (*Moehringia trinervia*), wood dock (*Rumex sanguineus*), red campion (*Silene dioica*), occur locally on banks and towards the wood-edge.
- 4.4.121 Secondary woodland also occurs in the habitat complex centred on the Yeading Brook west of the airfield, but it has not been surveyed in detail.
- 4.4.122 Naturally regenerating scrub on the railway is extensively growing up into secondary woodland. Large areas on the railway qualify as woodland in the Phase 1 scheme of habitat definitions on account of the height (over five metres) and density (over 30% cover) of the saplings. These woods are mostly dominated in the canopy by pedunculate oak (*Quercus robur*), but other species are locally prominent including sycamore (*Acer pseudoplatanus*), silver birch (*Betula pendula*), ash (*Fraxinus excelsior*) and wild cherry (*Prunus avium*). The shrub-layer is generally dominated by hawthorn (*Crataegus monogyna*) and bramble (*Rubus fruticosus* agg.), but many other species occur in small quantity, including garden-escapes such as Himalayan cotoneaster (*Cotoneaster simonsii*). Owing to deep-shade, the field-layers are often sparse, containing ivy (*Hedera helix*), bramble (*Rubus fruticosus* agg.) and an impoverished grassland flora surviving from before the trees grew up.
- 4.4.123 In various places, especially the corridor of the River Pinn south of the railway, there are also planted stands of broad-leaved trees. These may differ little in their general characteristics from recent secondary woodland, though the presence of alder (*Alnus glutinosa*) is often distinctive, and plantations dominated by willows e.g. crack willow (*Salix ×fragilis*), or poplars, e.g. grey poplar (*Populus ×canescens*) with field-layers dominated by common nettle (*Urtica dioica*) are again very distinctive.
- 4.4.124 On Ruislip Golf Course stands of young planted ornamental trees are generally of sufficient height to qualify as woodland under the Phase 1 habitat definitions. They consist of diverse species over grassy field-layers but have not been surveyed in detail.

<sup>15</sup> Natural Environment and Rural Communities (NERC) Act 2006 (2006). *Section 41: Habitats of Principal Importance in England*. Her Majesty's Stationery Office, UK.

## Scrub

- 4.4.125 Thorn scrub dominated by hawthorn (*Crataegus monogyna*) is abundant on the railway line-sides in this CFA. It forms mosaic and transition with lower-growing but often dense scrub dominated by bramble (*Rubus fruticosus* agg.). It usually contains saplings of tree species such as ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*), and may contain additional shrubs such as blackthorn (*Prunus spinosa*) and dog-rose (*Rosa canina*). Locally there are garden-escapes such as Himalayan cotoneaster (*Cotoneaster simonsii*). Beneath older hawthorn (*Crataegus monogyna*), field-layers are commonly reduced to a scatter of ivy (*Hedera helix*) or may be bare of vegetation, but in more open scrub bramble (*Rubus fruticosus* agg.) and grassland forbs may survive in reduced quantity.
- 4.4.126 Similar complexes of thorn scrub and bramble scrub also occur extensively in the corridor of the River Pinn, the Ickenham Green area, the peripheral open spaces around Ruislip Golf Course, and the corridor of the Yeading Brook (including former agricultural fields set aside for wildlife to the west). Close to the rivers they are often dominated by blackthorn (*Prunus spinosa*) rather than hawthorn (*Crataegus monogyna*), and they may include shrub willows such as grey willow (*Salix cinerea* ssp. *oleifolia*). In some places, they consist of suckering English elm (*Ulmus procera*) surviving after Dutch Elm disease (and seldom exceeding five meters in height, though some taller stands are borderline between woodland and scrub under the Phase 1 habitat definitions). Here elder (*Sambucus nigra*) is often abundant, and due to open canopies they have tall eutrophic field-layers dominated by tall semi-ruderal herbs and scramblers, especially common nettle (*Urtica dioica*), cow parsley (*Anthriscus sylvestris*) and cleavers (*Galium aparine*).
- 4.4.127 Scrub of this kind occurs more fragmentarily in the agricultural areas of the CFA, e.g. elm scrub at Ickenham pumping station, blackthorn scrub on a green lane at Breakspear Road and areas of scrub dominated by either blackthorn or grey willow (*Salix cinerea*) in fields south-east of Bayhurst Wood.
- 4.4.128 On the railway, and especially on disused sidings, scrub dominated by butterfly-bush (*Buddleja davidii*) is locally abundant. Tree and shrub saplings occur sparsely, but this open scrub often has species-rich ruderal field-layers, which are described below.
- 4.4.129 On a vacant industrial site at South Ruislip there are extensive stands of scrub consisting of silver birch (*Betula pendula*) saplings, goat willow (*Salix caprea*) and butterfly-bush (*Buddleja davidii*) on semi-hard substrates. Clearly this will soon become woodland, but it does not as yet much exceed five meters in height. The field-layers in the densest places are species-poor or shaded out altogether, but generally this open scrub forms mosaic and transition with ephemeral vegetation described below that is very species-rich.
- 4.4.130 Though mapping from aerial photography may not show it, from simple observation small patches of scrub must also occur locally in ruderal sites such as abandoned yards, strips of unused land between buildings, and similar places in the eastern part of the CFA, and especially in light industrial areas. This scrub likewise consists of butterfly-bush (*Buddleja davidii*) with some bramble (*Rubus fruticosus* agg.) and tree saplings. It often grades into ephemeral ruderal vegetation described below.

## Hedgerows

- 4.4.131 Fields in the agricultural areas in the western part of the CFA between Breakspear Road South and Harvil Road (and also fields south of the railway and west of West Ruislip Station) are mostly bounded by native-species hedges. The hedges are mostly trimmed to heights of about 1.5m to 2.5m though there are a few overgrown hedges. There are occasional hedgerow trees, mostly ash (*Fraxinus excelsior*) or pedunculate oak (*Quercus robur*) in at least some of the hedges. Many have small field-ditches that, though they may be wet at the bottom, nevertheless contain rough grassland or tall-herb vegetation rather than wetland vegetation. A few have small banks, though large hedge-banks are not generally a feature of the area. Though some hedges are defunct (i.e. more than 10% gaps), most are intact and well connected to one another. Thus for example at Copthall Farm, whatever the quality of the individual hedges, (see hedgerows section of Appendix EC-001-001), there is a fine hedgerow network not too greatly disrupted by hedgerow removal.
- 4.4.132 From the above it follows that many hedges in the area have many of the physical features that score towards making a hedge an 'important hedge' under the Hedgerow Regulations 1997. At Copthall Farm for example, many individual hedges would have at least four features, i.e. less than 10% gaps, more than four connection points (under a system of identifying connections set out in the Regulations), standard trees, and a ditch. A few might also have two further scoring features, i.e. a bank, and more than three of the woodland herbs listed under Schedule 2 in the Regulations.
- 4.4.133 The hedges in the area are, however, for the most part species-poor, often consisting almost entirely of either hawthorn (*Crataegus monogyna*) or blackthorn (*Prunus spinosa*). A few additional species are scattered throughout, especially dog-rose (*Rosa canina*) and elder (*Sambucus nigra*). Overall therefore a hedge with ash standards might have five or six of the qualifying woody species listed in Schedule 3 of the Regulations in total, and a few might have more; but the average in a 30m stretch would generally be much lower, seldom much exceeding three to four species. Despite the high score on physical features, these hedges are therefore unlikely to qualify as 'important hedges' under the Regulations, except perhaps beside public footpaths where reduced scores apply (see the hedgerows section of Appendix EC-001-001.).
- 4.4.134 Vegetation at the foot of the hedges is mostly rough grassland with tall herbs such as cow parsley (*Anthriscus sylvestris*) and hogweed (*Heracleum sphondylium*) described below.
- 4.4.135 A further area to the south-east of Bayhurst Wood, was included in the scheme design towards the end of project surveys and no access was permitted for detailed surveys. Surveys from PRoW recorded agricultural land including hedgerows. The scoping survey identified the possibility that some of the hedgerows may be 'important' and are in close proximity or adjoin to Bayhurst Wood (see description in woodland section). It is therefore assumed that some of these hedgerows are likely to qualify as 'Important' under the Hedgerow Regulations 1997.
- 4.4.136 Though mapping from aerial photography may not show it, a few native-species hedgerows exist around gardens and private land parcels in this CFA. From simple

observation they too are likely to be species-poor hedges of hawthorn (*Crataegus monogyna*), and by reason of their association with gardens or non-agricultural land they would fall outside the remit of the Hedgerow Regulations 1997.

- 4.4.137 The CFA contains many garden and park hedges consisting of Garden Privet (*Ligustrum ovalifolium*) or many other ornamental shrubs. Again there are many 'leylandii' hedges normally consisting of Lawson's cypress (*Chamaecyparis lawsoniana*). None have been individually surveyed or mapped, and for Phase 1 mapping purposes it is arguable that they should in any case be treated as linear patches of ornamental shrubbery.

### Grassland

- 4.4.138 The agricultural grassland in this CFA is mostly improved grassland or species-poor semi-improved grassland used as pasture or cut for silage and hay. At Copthall Farm for example, the sward in most fields is dominated by perennial rye-grass (*Lolium perenne*) and rough meadow-grass (*Poa trivialis*) with creeping bent (*Agrostis stolonifera*) and meadow foxtail (*Alopecurus pratensis*) at lower levels of abundance, while common dicotyledonous herbs such as meadow buttercup (*Ranunculus acris*), creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*) are also abundant. Under Phase 1 habitat definitions this is fairly clearly improved grassland; but patches where meadow foxtail (*Alopecurus pratensis*), a characteristic species of meadows on heavy clays in the Middlesex river valleys, is abundant, do look more like semi-improved grassland.
- 4.4.139 There are perennial rye-grass (*Lolium perenne*) and white clover (*Trifolium repens*) leys representing the extreme of agricultural improvement in this CFA. By contrast the relatively few good semi-improved pastures lack perennial rye-grass (*Lolium perenne*) altogether, or have native forms of this species as distinct from the vigorous agricultural cultivars characteristic of improved grasslands. Examples east of Breakspear Road South have swards dominated by mixtures of common bent (*Agrostis capillaris*), meadow foxtail (*Alopecurus pratensis*), Yorkshire-fog (*Holcus lanatus*) and rough meadow-grass (*Poa trivialis*) with small amounts of cock's-foot (*Dactylis glomerata*) and red fescue (*Festuca rubra*) and a wide range of dicotyledonous herbs, rather few of which tend to be represented in any one patch (by contrast with most unimproved swards where species-richness is often high in small patches rather than across fields as a whole); these include creeping cinquefoil (*Potentilla reptans*), common sorrel (*Rumex acetosa*) and meadow buttercup (*Ranunculus acris*) at moderate levels of abundance, and a wide range of species at low levels of abundance, e.g. greater bird's-foot-trefoil (*Lotus pedunculatus*), hoary ragwort (*Senecio erucifolius*), none of which are especially characteristic of unimproved swards (the examples here are suggestive of slightly wet areas).
- 4.4.140 Many grazed swards (including those described in the preceding paragraph) have small areas of disturbance that admit tall semi-ruderal herbs, e.g. creeping thistle (*Cirsium arvense*), curled dock (*Rumex crispus*), and smaller ruderals, e.g. sticky mouse-ear (*Cerastium glomeratum*), swine-cress (*Lepidium coronopus*), greater plantain (*Plantago major*) as minor but more-or-less constant elements of the sward.

- 4.4.141 Where agricultural swards have been left ungrazed and uncut for several years, perhaps for wildlife or public amenity purposes, e.g. fields south of the railway between the River Pinn and Breakspear Road South, false oat-grass (*Arrhenatherum elatius*) has generally taken over to create a tall rough-grassland sward where relics of the former semi-improved sward can usually be found. In particular meadow foxtail (*Alopecurus pratensis*) often remains abundant; it matches false oat-grass in height and competes with it relatively well, especially on the heavier and damper soils. In these fields at Breakspear Road South these two coarse grasses grow with an under-storey of additional grasses including red fescue (*Festuca rubra*), Yorkshire-fog (*Holcus lanatus*) and rough meadow-grass (*Poa trivialis*). Dicotyledonous herbs are frequent, but they are mainly the larger grassland species, e.g. common sorrel (*Rumex acetosa*), hoary ragwort (*Senecio erucifolius*), scramblers, e.g. cleavers (*Galium aparine*), lesser stitchwort (*Stellaria graminea*), and semi-ruderal species e.g. square-stalked willowherb (*Epilobium tetragonum*), cut-leaved crane's-bill (*Geranium dissectum*). The smaller grassland forbs have not survived in these swards, and the only indication of their possible former nature conservation quality is the occasional presence of meadow barley (*Hordeum secalinum*) a species not generally found in much improved swards.
- 4.4.142 Rough grassland swards similar to those described in the preceding paragraph exist in the nearby Ickenham Green area, and perhaps elsewhere, e.g. fields west of the Yeading Brook (where they may be damper and more species-rich).
- 4.4.143 While none of these have been surveyed in detail, from PRoW it can be seen that one field in the Ickenham Green area is very rich in dicotyledonous herbs and may be unimproved grassland (though enhancement with a wild-flower seed-mixture cannot be ruled out without detailed survey). Several species of local conservation interest, including pignut (*Conopodium majus*) and ziz-zag clover (*Trifolium medium*) were noted from casual observation.
- 4.4.144 Beside a PRoW between the River Pinn and Ruislip Golf Course there is relatively species-rich wet grassland with tufted hair-grass (*Deschampsia cespitosa*), various rush species (*Juncus* species) and dicotyledonous herbs such as great willowherb (*Epilobium hirsutum*) and common fleabane (*Pulicaria dysenterica*). It has not been surveyed in detail.
- 4.4.145 Meadows and pastures, and farmland are Hillingdon BAP habitats.
- 4.4.146 Weedier rough grassland swards that are more strongly dominated by false oat-grass (*Arrhenatherum elatius*) and other coarse grasses, e.g. cock's-foot (*Dactylis glomerata*), occur abundantly on roadsides in the west of the CFA and in untended places generally. They are the common grassland type on road-sides throughout lowland Britain. Often they are rich in tall semi-ruderal herbs, e.g. creeping thistle (*Cirsium arvense*), common nettle (*Urtica dioica*), and they often grade into stands of tall-herb ruderal vegetation.
- 4.4.147 On the railway there are stands of rough grassland strongly dominated by false oat-grass (*Arrhenatherum elatius*), which form mosaics with bramble scrub and ephemeral ruderal vegetation. Though other coarse grasses such as cock's-foot (*Dactylis glomerata*) are often present, this grassland is often less mixed than rough grassland

types described in CFAs to the east. A few large semi-ruderal herbs such as common michaelmas-daisy (*Aster ×salignus*) are frequent, and a wide range of smaller grasses, especially red fescue (*Festuca rubra*), and many grassland forbs can occur at varying levels of abundance.

- 4.4.148 On paths and edges of amenity-turf areas, weedy rough grassland derived from amenity-turf is common. It is dominated by perennial rye-grass (*Lolium perenne*) and cock's-foot (*Dactylis glomerata*) together with a wide range of dicotyledonous herbs typical of nutrient-rich trampled soils, e.g. greater plantain (*Plantago major*).
- 4.4.149 Amenity-turf in parks e.g. at Ruislip Gardens, and elsewhere is generally dominated by perennial rye-grass (*Lolium perenne*) together with common weeds such as daisy (*Bellis perennis*), ribwort plantain (*Plantago lanceolata*) and creeping buttercup (*Ranunculus repens*). However, some swards do contain additional grass species, so that they are transitional to the rough grassland swards described above, and it is the regime of close-mowing management that identifies them as amenity-turf.

### Watercourses

- 4.4.150 The Yeading Brook is a small stream about 2m wide and an estimated 0.3m deep. It runs in part through recreational areas, such that the bank top vegetation comprises mown grassland, and in part, south of the railway, it runs through a complex of scrub and trees, tall-herb vegetation, wet grassland and rough grassland. Rivers and Streams are a Hillingdon BAP habitat.
- 4.4.151 The River Pinn is a meandering river approximately 6 m wide and mostly about 0.4m deep over a generally soft bed. It has little submerged aquatic vegetation though there are water-crowfoots (*Ranunculus subgenus batrachium species*) where the railway crosses the River Pinn; but they are extensively fringed by stands of emergent aquatics such as reed sweet-grass (*Glyceria maxima*). The banks have trees, some areas of secondary or plantation woodland, scrub, rough but not wet grasslands, and also extensive stands of invasive plants in some areas. The River Pinn may qualify as a habitat of principal importance if otter is confirmed to be present.
- 4.4.152 A small stream, Ickenham Stream, about 1.5m wide is present at Ickenham Green. Where Ickenham Stream crosses Ruislip Golf Course it is mostly a dry depression in mown grassland, but with some small sections of shallow water and is choked with terrestrial vegetation. South of the golf course, the stream emerges as a shallow brook running over a bed of cobbles south of the railway.
- 4.4.153 Newyears Green Bourne is a small stream, which runs in a ditch through fields and under Harvil Road. The stream holds little water, and is largely shaded by the adjacent scrub and hedgerows.

- 4.4.154 Rivers and Streams are a Hillingdon BAP habitat.

### Water bodies

- 4.4.155 There are a number of ponds in the western part of this area, particularly on Ruislip Golf course and agricultural land.

- 4.4.156 There are four ponds and a connected drain on Ruislip Golf Course. There is one surrounded and shaded by willows at the foot of the railway embankment at the western end of the golf course. Access did not permit close inspection, but from a nearby PRoW, it appeared to be a shallow pond, with little emergent or aquatic vegetation. Two ponds on the golf course (one near the centre and one further east) were not adjacent to the PRoW and could not be inspected. A fourth appeared relatively recent, formed by 'ponding up' at the southern end of a drain which runs across the golf course.
- 4.4.157 There are two ponds and a moat at Brackenbury Farm. The moat is at least 1m deep and stocked with mirror carp. A fringe of lesser pond-sedge (*Carex acutiformis*) was recorded. Detailed surveys could not be undertaken. One former pond adjacent to Breakspear Road South has been filled in, and access was not permitted to the existing ponds for survey.
- 4.4.158 There are two ponds at the Pharmaceutical Research Facility both of which hold water and support marginal and aquatic vegetation including rushes (*Juncus* sp), sedges (*Carex* sp) and have a 100% algal cover. One pond also has willowherb (*Epilobium* sp) in the margin vegetation.
- 4.4.159 There are a number of field ponds north of St Leonards Farm and south of Bayhurst Wood. These ponds have not been surveyed.
- 4.4.160 As a precaution, it is assumed that the ponds described above are used by great crested newts, which would automatically make them a habitat of principal importance. Standing Water is a Hillingdon BAP habitat.
- 4.4.161 Further ponds include a single pond at Dunster Cottage, two ponds at Highway Farm, a field pond near Ickenham Pumping Station, and two ponds and a connected ditch at Copthall Farm. The pond at Dunster Cottage is a small disused swimming pool with steep sides and little aquatic vegetation. The ponds at Highway Farm are ornamental ponds with exposed lining up the lower banks and short amenity grassland on the upper banks. The pond contains stands of Common Reed (*Phragmites australis*) with other emergent plants in pots. The pond near Ickenham Pumping station is a small pond located between three fields with hedgerows on two sides, so that it is shaded by hedgerows and adjacent scrub. The ponds at Copthall Farm largely dried out during the spring and supported little emergent vegetation. None of these ponds were found to support great crested newt, and so they are not considered to be habitats of principal importance.
- 4.4.162 There are also moats around several houses or ancient sites. Several support well-developed wetland vegetation, but none have been surveyed in detail.

#### *Tall herb and fern*

- 4.4.163 Stands of nettle-bed vegetation and stands dominated by rosebay willowherb (*Chamerion angustifolium*) are scattered throughout the CFA. They are extensive in a few places, such as the Ickenham Green area, and fields set aside to wildlife west of the Yeading Brook. They grade into bramble scrub, other forms of scrub, and rough grassland.

4.4.164 On the railway there are stands of tall ruderal vegetation in mosaic with scrub and grassland. They fall into several types:

- those dominated by rosebay willowherb (*Chamerion angustifolium*);
- strongly eutrophic stands dominated by common nettle (*Urtica dioica*); and
- mixed stands with such species as mugwort (*Artemisia vulgaris*), creeping thistle (*Cirsium arvense*), broad-leaved dock (*Rumex obtusifolius*) and common nettle (*Urtica dioica*).

They are all liable to grade into bramble scrub on the one hand and ephemeral ruderal vegetation on the other. There are also a few stands of bracken (*Pteridium aquilinum*).

4.4.165 Tall-herb ruderal vegetation containing species such as creeping thistle (*Cirsium arvense*) and common nettle (*Urtica dioica*) is also scattered patchily and in small quantity around the edges of open spaces, industrial yards, roadsides, and the Grand Union Canal corridor. It is likely to be present in the areas mapped only from aerial photography in this CFA.

#### *Ephemeral/short perennial*

4.4.166 On railway ballast substrates, e.g. disused sidings, species-rich ephemeral ruderal vegetation commonly consists of mixtures of fine-leaved grasses, especially rat's-tail fescue (*Vulpia myuros*) and red fescue (*Festuca rubra*) and a wide range of dicotyledonous herbs among which the more characteristic species are common michaelmas-daisy (*Aster ×salignus*), hoary mustard (*Hirschfeldia incana*), common toadflax (*Linaria vulgaris*), black medick (*Medicago lupulina*) and hawkweed oxtongue (*Picris hieracioides*). Though not necessarily all that frequent here, especially characteristic of railway ballast is pale toadflax (*Linaria repens*). These assemblages range from very open stands on bare ballast, often featuring the more ephemeral species, e.g. sticky groundsel (*Senecio viscosus*), to closed stands grading into adjacent rough grasslands. In places the presence of such species as wild carrot (*Daucus carota* ssp. *carota*), oxeye daisy (*Leucanthemum vulgare*), common bird's-foot-trefoil (*Lotus corniculatus*) and wild marjoram (*Origanum vulgare*) suggests deliberate introduction of species by means of wild-flower seed-mixtures, perhaps on nearby land from which they have spread to the railway.

4.4.167 On a vacant industrial site at South Ruislip there are extensive stands of species-rich ephemeral vegetation on crushed brick and concrete substrates. They consist of narrow-leaved meadow-grass (*Poa angustifolia*) with mostly quite tall (0.5m) dicotyledonous herbs including tall melilot (*Melilotus altissimus*), ribbed melilot (*Melilotus officinalis*) and hawkweed oxtongue (*Picris hieracioides*) over a denser layer of shorter dicotyledonous herbs including wild carrot (*Daucus carota* ssp. *carota*), blue fleabane (*Erigeron acris*), perforate St John's-wort (*Hypericum perforatum*), common toadflax (*Linaria vulgaris*), black medick (*Medicago lupulina*) and white clover (*Trifolium repens*). Acrocarpous mosses are abundant.

### *Arable/cultivated land*

- 4.4.168 Though most fields in the west of the CFA are under grass, the majority of them could be treated as arable at any time, and short grass leys are technically arable under the Phase 1 habitat definitions. None seen during the surveys had species-rich headlands, although fields to the south-west and south-east of Bayhurst Wood appear to have wider margins, but have not been subject to Phase 1 survey. Farmland is a Hillingdon local BAP Habitat.

### *Buildings/structures*

- 4.4.169 The CFA contains a wealth of buildings. Animal species using them are discussed in reports dealing with those species. Otherwise buildings often support very limited higher-plant vegetation, e.g. ruderals such as Butterfly-bush (*Buddleja davidii*), ferns such as Hart's-tongue Fern (*Asplenium scolopendrium*), as well as mosses and lichens, but none of this would fall within Phase 1 habitat definitions, and is not mapped.
- 4.4.170 Blue-brick railway bridges and abutments at the River Pinn and Breakspear Road South are exceptionally covered with plants of at least modest botanical interest including hawkweeds (*Hieracium* species) and ferns as well as a wide range of ruderal species, e.g. willowherbs (*Epilobium* species).

### *Other habitats*

- 4.4.171 Several of the habitat types described above occur in such complex mosaic and transition, especially on the railway, that it is common practice to describe them as single habitat types including:
- complexes of thorn scrub, bramble scrub, tall-herb ruderal vegetation and rough grassland with no bare ground on railway embankments (also on fields set aside for wildlife west of the Yeading Brook);
  - complexes of open buddleia scrub, open bramble scrub, species-rich rough grassland and ephemeral ruderal vegetation with plenty of bare ground on free-draining nutrient-poor substrates, especially railway ballast; and
  - complexes of open ruderal scrub, eutrophic (nettle-bed) or mixed (thistle-bed) tall-herb ruderal vegetation, and ephemeral ruderal vegetation with, or without, bare ground around the edges of yards and industrial sites.
- 4.4.172 Complexes of habitat around the River Pinn include areas of secondary and plantation woodland, thorn and bramble scrub, tall-herb vegetation, rough grasslands, and river and water-margin habitats that, in juxtaposition to one another, are unusually extensive even by outer London standards. Collectively they provide a large biodiversity resource of conservation interest at the borough level, although the habitats and land parcels supporting them, with the exception of the river, would mostly have lower levels of conservation interest individually.
- 4.4.173 There are extensive stands of species-rich ephemeral vegetation on crushed brick and concrete substrates occurring in mosaic with scrub, grassland and bare ground at the vacant industrial site at the South Ruislip vent shaft main compound. This mosaic habitat does not align directly with any of the Phase 1 Habitat categories, but reflects a number of the sub-categories within the components of the mosaic. Due to the size

of the area, the presence of areas of ephemeral / short perennial vegetation and associated scrub and rough grassland, along with the recently disturbed nature of the site, this area qualifies as the Section 41 habitat, open mosaic habitat on previously developed land.

- 4.4.174 Scattered trees and street trees in this CFA belong to many species. Ornamental shrubbery though not mapped from aerial photography is widely present. The species content depends on historical planting fashions, so that older types can often be distinguished from newer types, though in city squares constant management tends to create a much greater degree of mixing between long-established shrubs and newer plantings. The same applies to flower beds.

## 5 National Vegetation Classification (NVC)

### 5.1 Introduction

- 5.1.1 This section of the appendix details National Vegetation Classification<sup>16</sup> (NVC) baseline data relevant to the section of the Proposed Scheme that will pass through CFA1 to CFA6 inclusive.

### 5.2 Methodology

- 5.2.1 Details of the standard methodology utilised for NVC surveys is provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2).
- 5.2.2 The need for NVC survey at some sites and not others was determined on the basis of Phase 1 survey findings.
- 5.2.3 Pre-existing data was requested from Greenspace Information for Greater London (GiGL), as part of the wider desk study, including citations for non-statutory designated sites. No further relevant information was returned.
- 5.2.4 Details of the locations where NVC was conducted are provided in Table 5 and in accompanying map series EC10.

Table 5: Summary of NVC surveys undertaken within CFA1 to 6 inclusive

Ecology survey code	NVC survey site name	Location	OS Grid Reference	Habitat types included in survey	Survey date	CFA	Distance from the Proposed Scheme (m) and orientation
010-PH2-012001	Rail land near Mandeville  Westgate vent shaft main compound	Rail land to the south of Westgate, Ealing	TQ 1819 8272	Rough grassland, scrub, ornamental planting	6 June 2013	5	Within
010-PH2-015001	Rail land near Greenpark Way vent shaft main compound	Rail land to the south of Greenpark Way, Ealing	TQ 1547 8367	Rough grassland, scrub, tall ruderal, open mosaic	5 June 2013	5	Within
010-PH2-017001	Rail land near Mandeville Road vent shaft main compound	Rail land to the west of Mandeville Road, Ealing	TQ 1346 8444	Rough grassland, scrub, woodland, open mosaic	6 June 2013	5	Within
010-PH2-020001	Rail land near South Ruislip vent shaft main compound	Rail land to the west of south-west of Victoria Road, Hillingdon	TQ 1075 8563	Rough grassland, scrub, plantation woodland	7 June 2013	6	Within
010-PH2-	Rail land between High Street Ickenham to	Rail land between High Street Ickenham to Harvil	TQ 0719 8719	Rough grassland, scrub, woodland, tall ruderal, open	3-4 June	6	Within

<sup>16</sup> NVC is a detailed survey and classification system that is used to compare plant communities with a range of defined community types.

Ecology survey code	NVC survey site name	Location	OS Grid Reference	Habitat types included in survey	Survey date	CFA	Distance from the Proposed Scheme (m) and orientation
023001	Harvil Road	Road Hillingdon		mosaic	2013		
010-PH2-025001	Copthall Covert	Copthall Covert, located between Breakspear Road South, and Harvil Road.	TQ065871	Woodland	12 June 2013	6	Within

## 5.3 Deviations, constraints and limitations

- 5.3.1 On railway ballast there are commonly species-rich, open assemblages of grasses, grassland forbs and ephemerals that do not begin to resemble any plant community described in the NVC. They occur widely, and have at least some consistent physiognomic and species-composition characteristics; and therefore they probably are non-described plant community types that deserve to be covered in any future revision of the NVC. But for the time being there is no consensus on how to deal with them. Some say that the NVC is a comprehensive framework, and therefore make tenuous assignments to the nearest NVC type, no matter how much it stretches other people's credulity. Others simply regard these assemblages as non-NVC vegetation, and either assign them to plant communities described in the Continental literature (where plant community description has a longer history than in the UK), or else recognise *ad hoc* plant communities for the purposes of their own individual reports. This report gravitates towards the latter position.
- 5.3.2 Specific local methodological deviations, and the areas to which any such deviations applied are as follows:
- at rail land (CFA5), hot, dry weather meant early ephemerals and mosses of open mosaic habitats were in poor condition, and some could have been overlooked. This is unlikely to affect the overall assessment of the habitat;
  - at rail land (CFA5 and 6) there was no access to areas which were unsafe; and
  - in assessing ferns on brickwork in inner London (CFA1, 2 and 3), almost all plants were out of reach and many were not reliably determinable even using binoculars.
- 5.3.3 Completeness of survey data was affected by lack of access. Sites at which NVC surveys were scoped in but were not undertaken due to lack of access are presented in Table 6.

Table 6: Summary of locations in CFA1 to 6 inclusive where requirement for NVC survey identified but no access available for survey

Survey site name	Location	OS grid reference	Description of proposed survey location	CFA	Distance from the Proposed Scheme (m) and orientation
Network Rail Land in CFA2	Rail junctions to the west of Camley Street, Camden	TQ298840	Rail side habitats located at the eastern end of the HSI link, which from views from PRow and aerial photography appear to support woodland, scrub and grassland habitats.	2	Within
Adelaide Local Nature Reserve (LNR) and Adelaide Road and Chalk Farm Embankment Site of Borough Importance (SBI.I)	Land to the south of Adelaide Road, Camden,	TQ276843	Woodland, scrub and grassland habitats along with two small ponds.	3	Within
Network Rail Land in CFA3	Rail land to the south of Chalk Farm station	TQ278843	Rail side habitats located south of Chalk Farm station, which from views from PRow and aerial photography appear to support scattered scrub, grassland and ephemeral/short perennial habitats.	3	Within
Network Rail Land in CFA4	Rail land at Old Oak Common Depot, and further rail land eastwards towards North Acton Station and Acton Station.	TQ214820	Rail habitats at Old Oak Common Depot and on lines north-east and south-east of here which appear from views from PRow and aerial photography to support woodland, scrub grassland and ephemeral/short perennial habitats	4	Within
Newyears Green Covert	Newyears Green Covert and adjacent fields to the east of Harvil Road	TQ064876	Woodland and adjacent fields	6	Within

## 5.4 Baseline

### CFA1

- 5.4.1 No field surveys were undertaken for NVC surveys in CFA1, as there were no habitats which warranted NVC survey.

#### *Lower plants on brick walls within this CFA*

- 5.4.2 Most buildings to be demolished in this CFA have no plants growing on them. One plant of hart's-tongue fern (*Asplenium scolopendrium*) was seen on one building. A bridge at Mornington Street has a small population of wall-rue (*Asplenium ruta-muraria*); and modern concrete bridge parapets at Hampstead Road have abundant cushions of the common moss *Grimmia pulvinata*. The few ferns recorded in surveys do not amount to a resource of conservation interest.

- 5.4.3 Only a very small proportion of railway brickwork in Camden inspected, and plants will occur in areas which were not inspected. Plants are frequent round leaking downpipes on older brick buildings in the CFA generally.

### CFA<sub>2</sub>

- 5.4.4 No field surveys were undertaken for NVC surveys in CFA<sub>2</sub>, as there were no habitats which warranted NVC survey.

#### *Lower plants on brick walls within this CFA*

- 5.4.5 Most buildings to be demolished in this CFA have no mosses or ferns growing on them, though many have butterfly-bush (*Buddleja davidii*), which is ubiquitous in the inner city.
- 5.4.6 Most of the brick railway bridges in this CFA had a few plants of fern species, but generally only a single species and less than six individual plants (usually far less) on any one bridge (except where there were patches of juveniles unlikely to survive to maturity). By far the commonest species is hart's-tongue fern (*Asplenium scolopendrium*) of which in total around seven mature plants and ten or so juveniles were seen on around five structures; but also recorded in total were four plants of male-fern (*Dryopteris filix-mas*) on four structures (i.e. one plant on each), one small patch of Maidenhair Spleenwort (*Asplenium trichomanes*) and possibly one plant of Black Spleenwort (*Asplenium adiantum-nigrum*), although this was based on poor material which was out of reach.

### CFA<sub>3</sub>

- 5.4.7 No field surveys were undertaken for NVC surveys in CFA<sub>3</sub>.

### CFA<sub>4</sub>

- 5.4.8 No field surveys were undertaken for NVC surveys in CFA<sub>4</sub>.

### CFA<sub>5</sub>

- 5.4.9 Rail Land in CFA<sub>5</sub> includes rail land near Westgate vent shaft main compound, rail land near Greenpark Way vent shaft main compound and rail land near Mandeville Road vent shaft main compound.

#### *Overview*

- 5.4.10 The survey site comprises sections of rail land within 100m of three vent shaft main compounds: 0.63km at Westgate (Network Rail (NWR) Area 5); 0.94km at Greenpark Way (NWR Areas 6-7); and 0.87km at Mandeville Road (NWR Areas 7-8). The survey took in all National Rail land on either side of the railway where accessible.
- 5.4.11 Vegetation at the Westgate vent shaft main compound comprises a narrow strip of species-poor rough grassland, bramble (*Rubus fruticosus* agg.) scrub and planted ornamental shrubs, together with young secondary woodland on a cutting at Hangar Lane.
- 5.4.12 The Greenpark Way section contains the largest extent of open mosaic habitat on CFA<sub>5</sub> and CFA<sub>6</sub> rail land, which occurs along disused sidings. Other habitats present include rough grassland, bramble (*Rubus fruticosus* agg.) and hawthorn (*Crataegus*

*monogyna*) scrub and various tall ruderal communities, including stands of Japanese knotweed (*Fallopia japonica*).

5.4.13 The northern railway embankment at Mandeville Road ranges between 15 and 40m wide, and is dominated by secondary scrub and woodland. The main vegetation type is thorn scrub dominated by hawthorn (*Crataegus monogyna*). It forms a dense, closed canopy around Northolt Station, but east of Mandeville Road it is more open and occurs in mosaic with bramble (*Rubus fruticosus* agg.) scrub. There are small areas of mature secondary woodland. False oat-grass (*Arrhenatherum elatius*) grassland occurs locally in openings in the scrub canopy, and along disused sidings, where it has an open, moderately species-rich sward.

5.4.14 The following NVC and non-NVC vegetation types were recorded:

- scrub referable to the NVC type W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community;
- mature secondary woodland referable to the NVC type W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community;
- secondary woodland transitional between W21a and W10a;
- scrub broadly referable to the NVC type W24 *Rubus fruticosus*-*Holcus lanatus* underscrub;
- scrub intermediate between w24 and W21a;
- butterfly-bush (*Buddleja davidii*) scrub referable to the proposed NVC type<sup>17</sup> *Sambucus nigra*-*Urtica dioica* scrub;
- sown grassland referable to the NVC type MG1a *Arrhenatherum elatius* grassland, *Festuca rubra* sub-community;
- moderately species-rich false oat-grass (*Arrhenatherum elatius*) grassland referable to the NVC type MG1e *Arrhenatherum elatius* grassland, *Centaurea nigra* sub-community;
- species-poor false oat-grass grassland broadly referable to the NVC type MG1 *Arrhenatherum elatius* grassland;
- open false oat-grass grassland not referable to an NVC type, but recorded here as MG1 open variant for convenience;
- tall ruderal vegetation referable to the NVC type OV24b *Urtica dioica*-*Galium aparine* community, *Arrhenatherum elatius*-*Rubus fruticosus* sub-community;
- tall ruderal vegetation referable to the NVC type OV25b *Urtica dioica*-*Cirsium arvense* community, *Rumex obtusifolius*-*Artemisia vulgaris* sub-community;

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<sup>17</sup> Rodwell, J.S., Dring, J.C., Averis, A.B.G., Proctor, M.C.F., Malloch, A.J.C., Schaminee, J.H.J. and Dargie, T.C.D. (2000), *Review of Coverage of the National Vegetation Classification*. Joint Nature Conservation Committee, Peterborough.

- tall ruderal vegetation referable to the NVC type OV27b *Epilobium angustifolium* community, *Urtica dioica*-*Cirsium arvense* sub-community;
- tall ruderal vegetation referable to the proposed NVC type *Fallopia japonica* community;
- tall ruderal vegetation not referable to an NVC type, recorded here as *Galega officinalis*-*Melilotus officinalis* community; and
- open mosaic habitat not referable to an NVC type, recorded here as 'Open Mosaic 2' and 'Open Mosaic 3'.

### Woodland and scrub

- 5.4.15 Mixed thorn scrub is one of the most abundant vegetation types along the rail embankments in both CF5 and CF6. It is secondary in origin and typically comprises some hawthorn (*Crataegus monogyna*) together with a variety of other shrubs and tree saplings at different levels of abundance, including sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*), wild cherry (*Prunus avium*), grey willow (*Salix cinerea*) and English elm (*Ulmus procera*). It varies in height between 4 and 12m and often occurs in mosaic and transitions with bramble (*Rubus fruticosus* agg.) scrub and developing pedunculate oak (*Quercus robur*) woodland. The field-layer in denser scrub is typically heavily shaded and species-poor, comprising a carpet of ivy (*Hedera helix*) with frequent tree saplings and a low to moderate cover of bramble (*Rubus fruticosus* agg.). In stands where the cover of ivy is lower, other species such as cow parsley (*Anthriscus sylvestris*), the moss *Kindbergia praelonga* and bramble can be prominent. A wide range of other species of both shady and open habitats occurs, but is rarely very abundant. These include rough-stalked feather-moss (*Brachythecium rutabulum*), cleavers (*Galium aparine*), wood dock (*Rumex sanguineus*), stone-parsley (*Sison amomum*) and hedge woundwort (*Stachys sylvatica*). This scrub is clearly referable to the NVC type W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community.
- 5.4.16 Mature secondary pedunculate oak (*Quercus robur*) woodland is present in a few areas along the rail corridor. Compared to the more abundant scrub and young woodland types recorded, it has well-defined upper and lower storeys, with a canopy height of around 15m. As well as pedunculate oak (*Quercus robur*), there are occasional other trees including ash (*Fraxinus excelsior*) and Swedish whitebeam (*Sorbus intermedia*). The shrub cover underneath is about 20% and typically includes some hawthorn (*Crataegus monogyna*). The field-layer is species-poor and dominated by bramble (*Rubus fruticosus* agg.) with locally frequent male-fern (*Dryopteris filix-mas*). Though secondary in origin, this woodland is clearly developing towards the NVC type W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community.
- 5.4.17 Younger secondary woodland transitional between W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community and W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community was recorded at the Westgate vent shaft main compound. This vegetation type is much more abundant in CFA6 and is described in greater detail in Section 6.4.44.

- 5.4.18 Dense stands of bramble (*Rubus fruticosus* agg.) occur frequently throughout the rail corridor either in pure stands or, more often, in mosaics and transitions with grassland and other scrub types. Bramble is overwhelmingly dominant in this vegetation type with only few frequent associates. Among these are the shrubs and tree saplings hawthorn (*Crataegus monogyna*), pedunculate oak (*Quercus robur*) and dog-rose (*Rosa canina*), and the tall herbs false oat-grass (*Arrhenatherum elatius*), hogweed (*Heracleum sphondylium*) and common nettle (*Urtica dioica*). This scrub is broadly referable to the NVC type W24 *Rubus fruticosus*-*Holcus lanatus* underscrub, but could not generally be assigned to one or other of the sub-communities.
- 5.4.19 Semi-ruderal scrub dominated by butterfly bush (*Buddleja davidii*) occurs at Greenpark Way. It is referable to the proposed NVC type *Sambucus nigra*-*Urtica dioica* scrub.

### Grasslands

- 5.4.20 Embankments at Greenpark Way have been sown with a grassland seed mixture and have developed into rough grassland predominantly consisting of red fescue (*Festuca rubra*) and false oat-grass (*Arrhenatherum elatius*). Broad-leaved herbs that have been sown-in include Continental varieties of native herbs such as common bird's-foot-trefoil (*Lotus corniculatus* var. *sativus*), oxeye daisy (*Leucanthemum vulgare*) and fodder burnet (*Poterium sanguisorba* ssp. *balearicum*). Locally, tall ruderal species such as mugwort (*Artemisia vulgaris*), rosebay willowherb (*Chamerion angustifolium*) and creeping thistle (*Cirsium arvense*) have become established in the sward. This weedy grassland is best described as the *Artemisia vulgaris* variant of MG1b *Arrhenatherum elatius* grassland, *Urtica dioica* sub-community.
- 5.4.21 Moderately species-rich rough grassland occurs in small patches amongst scrub on the cuttings either side of Mandeville Road. It has a closed sward comprising a mixture of the grasses false oat-grass (*Arrhenatherum elatius*), red fescue (*Festuca rubra*) and smooth meadow-grass (*Poa pratensis*) with locally frequent yellow oat-grass (*Trisetum flavescens*). Broad-leaved herbs include yarrow (*Achillea millefolium*), common knapweed (*Centaurea nigra*), wild carrot (*Daucus carota*), perforate St John's-wort (*Hypericum perforatum*), oxeye daisy (*Leucanthemum vulgare*) and common bird's-foot-trefoil (*Lotus corniculatus*). The grassland is referable to the NVC type MG1 and supports almost all the preferential species of the MG1e *Arrhenatherum elatius* grassland, *Centaurea nigra* sub-community.
- 5.4.22 Species-poor rough grassland dominated by false oat-grass (*Arrhenatherum elatius*) has developed naturally in narrow strips throughout the rail corridor, for example along ballast at the extreme track edge. Apart from false oat-grass, there is usually a handful of other herbs including yarrow (*Achillea millefolium*), wood avens (*Geum urbanum*), oxeye daisy (*Leucanthemum vulgare*), common toadflax (*Linaria vulgaris*) and bramble (*Rubus fruticosus* agg.). The grassland is referable to the NVC type MG1 *Arrhenatherum elatius* grassland, but it is rather ill-defined and not clearly assignable to a sub-community.
- 5.4.23 Open false oat-grass (*Arrhenatherum elatius*) grassland has developed along disused sidings either side of Madeville Road. Though false oat-grass is the most conspicuous component, the sward is actually very open and supports a moderate range of herbs and bryophytes of free-draining sites. Frequently occurring herbs include wild carrot

(*Daucus carota*), herb-Robert (*Geranium robertianum*), perforate St John's-wort (*Hypericum perforatum*), oxeye daisy (*Leucanthemum vulgare*), ribwort plantain (*Plantago lanceolata*) and bramble (*Rubus fruticosus* agg.). Small annuals such as squirrel tail fescue (*Vulpia bromoides*) were recorded surprising rarely for this type of habitat. Mosses attain moderately high cover over the ballast stones and sleepers, with the main species being *Bryum capillare*, *Brachythecium rutabulum*, *Didymodon* species and *Pseudoscleropodium purum*. Other noteworthy taxa recorded include species of hawkweed (*Hieracium*) and lichens of the genus *Cladonia*. Open vegetation of this kind is not adequately covered by the NVC. However, because false oat-grass is a major component, and the vegetation is likely to succeed to MG1 *Arrhenatherum elatius* grassland in time, it has been described here as an open variant of MG1.

### *Vegetation of open habitats*

- 5.4.24 Tall ruderal vegetation dominated by common nettle (*Urtica dioica*) occurs occasionally as small patches and in transitions with bramble (*Rubus fruticosus* agg.) scrub. Other species characterising this vegetation type include bindweed species (*Calystegia* species), cleavers (*Galium aparine*) and bramble. It is mostly referable to the NVC type OV24b *Urtica dioica*-*Galium aparine* community, *Arrhenatherum elatius*-*Rubus fruticosus* sub-community, though small stands of pure common nettle are likely to be the OV24a *Urtica dioica*-*Galium aparine* community, typical sub-community.
- 5.4.25 Tall ruderal vegetation at Greenpark Way includes mixed stands of weed species such as cow parsley (*Anthriscus sylvestris*), mugwort (*Artemisia vulgaris*), large bindweed (*Calystegia silvatica*), creeping thistle (*Cirsium arvense*) and cleavers (*Galium aparine*). These assemblages are characteristic of the NVC type OV25 *Urtica dioica*-*Cirsium arvense* community, and the frequent occurrence of mugwort puts it closest to the OV25b *Urtica dioica*-*Cirsium arvense* community, *Rumex obtusifolius*-*Artemisia vulgaris* sub-community.
- 5.4.26 Tall ruderal vegetation dominated by rosebay willowherb (*Chamerion angustifolium*) occurs fairly frequently in small to moderate-sized patches. Other species occurring alongside rosebay willowherb include common nettle (*Urtica dioica*) and bramble (*Rubus fruticosus* agg.), which characterises the OV27b *Epilobium angustifolium* community, *Urtica dioica*-*Cirsium arvense* sub-community.
- 5.4.27 Stands of tall ruderal vegetation dominated by Japanese knotweed (*Fallopia japonica*) are present at Greenpark Way. They are referable to the proposed NVC type *Fallopia japonica* community.
- 5.4.28 Stands of tall ruderal vegetation dominated by goat's-rue (*Galega officinalis*) and ribbed melilot (*Melilotus officinalis*) were recorded at Greenpark Way. Other species at much lower abundances include barren brome (*Anisantha sterilis*), wild carrot (*Daucus carota*), black medick (*Medicago lupulina*) and rough meadow-grass (*Poa trivialis*). This combination of species is not described by the NVC and has been recorded here as *Galega officinalis*-*Melilotus officinalis* community.
- 5.4.29 The greatest extent of herb-rich vegetation on CFA5 and CF6 rail land occurs on disused sidings south of Greenpark Way. The vegetation that has developed is being

colonised by the coarse grass false oat-grass (*Arrhenatherum elatius*) and shrubs such as butterfly-bush (*Buddleja davidii*) and bramble (*Rubus fruticosus* agg.), but it still retains an open, flower-rich sward with high species diversity. Among the most conspicuous species are the perennial herbs kidney vetch (*Anthyllis vulneraria*), wild carrot (*Daucus carota*), oxeye daisy (*Leucanthemum vulgare*) and wild marjoram (*Origanum vulgare*). Other perennial species include common Michaelmas-daisy (*Aster ×salignus*), common mouse-ear (*Cerastium fontanum*), sheep's-fescue (*Festuca ovina*), perforate St John's-wort (*Hypericum perforatum*) and hawkweed oxtongue (*Picris hieracioides*). Small annual herbs such as thyme-leaved sandwort (*Arenaria serpyllifolia*), fern-grass (*Catapodium rigidum*), common whitlowgrass (*Erophila verna*) and fairy flax (*Linum catharticum*), are scattered on the bare ground underneath and there are typically mosses including *Didymodon* species, cf. *Homalothecium lutescens* and *Tortula muralis*. Though the vegetation contains several slight calcicoles such as kidney vetch, fairy flax and wild marjoram, this is clearly not calcareous grassland and cannot otherwise be assigned to an NVC type. It has been recorded here as 'Open Mosaic 2'.

5.4.30 Very open vegetation on a section of track on the Greenford Road rail bridge was recorded separately from other open mosaic habitat in the area. It is distinguished by its lack of false oat-grass (*Arrhenatherum elatius*) and concentration of small annual herbs such as common whitlowgrass (*Erophila verna*), fairy flax (*Linum catharticum*) and squirrel tail fescue (*Vulpia bromoides*), though it is essentially the same community. Taken together, these open habitats qualify as the habitat of principal importance under the NERC Act 2010 'open mosaic habitat on previously developed land'.

5.4.31 The frequency tables for vegetation communities at Rail land near Westgate vent shaft main compound, ail land near Greenpark Way vent shaft main compound and rail land near Mandeville Road vent shaft main compound location (all in CFA5) are presented in the tables below.

Table 7: Frequency table for w21a

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Crataegus monogyna</i>	7	9	10	7	9	V
<i>Fraxinus excelsior</i>	2	4	3	2	-	IV
<i>Acer pseudoplatanus</i>	1	4	3	-	2	IV
<i>Prunus avium</i>	4	-	1	8	-	III
<i>Rosa canina</i>	-	-	-	2	1	II
<i>Quercus robur</i>	1	-	-	-	1	II
<i>Ulmus procera</i>	8	-	-	-	-	I
<i>Salix caprea</i>	-	-	-	-	4	I
<i>Cotoneaster lacteus</i>	2	-	-	-	-	I
<i>Cornus sanguinea</i>	1	-	-	-	-	I

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Cotoneaster simonsii</i>	-	1	-	-	-	I
<i>Ilex aquifolium</i>	-	-	1	-	-	I
<i>Ligustrum ovalifolium</i>	-	-	1	-	-	I
<i>Ligustrum vulgare</i>	-	-	-	-	1	I
<i>Prunus cerasifera</i> var. <i>pissardii</i>	-	-	1	-	-	I
<i>Sambucus nigra</i>	-	-	1	-	-	I
<i>Salix cinerea</i>	-	-	-	-	1	I
<i>Hedera helix</i>	2	10	4	2	6	V
<i>Kindbergia praelonga</i>	-	2	4	8	2	IV
<i>Rubus fruticosus</i> agg.	-	3	6	3	5	IV
<i>Brachythecium rutabulum</i>	-	2	4	3	5	IV
<i>Fraxinus excelsior</i>	-	3	3	1	4	IV
<i>Galium aparine</i>	3	2	1	3	-	IV
<i>Anthriscus sylvestris</i>	2	4	7	-	-	III
<i>Crataegus monogyna</i>	3	2		-	1	III
<i>Prunus avium</i>	1	2		2	-	III
<i>Ilex aquifolium</i>	1	1		-	1	III
<i>Mahonia aquifolium</i>	1	1	1	-	-	III
<i>Sison amomum</i>	-	-	-	3	2	II
<i>Dryopteris filix-mas</i>	-	1		3	-	II
<i>Fissidens species</i>	-	2	2	-	-	II
<i>Acer pseudoplatanus</i>	1		2	-	-	II
<i>Arrhenatherum elatius</i>	-	-	1	-	2	II
<i>Cotoneaster simonsii</i>	-	-	1	-	1	II
<i>Viola riviniana</i>	-	-	-	1	1	II
<i>Vinca minor</i>	10	-	-	-	-	I
<i>Aster xsalignus</i>	-	-	-	5	-	I
<i>Hypnum cupressiforme</i>	-	-	-	4	-	I
<i>Lonicera periclymenum</i>	-	-	4	-	-	I
<i>Geum urbanum</i>	-	-	3	-	-	I
<i>Lathyrus pratensis</i>	-	-	-	3	-	I
<i>Ulmus procera</i>	3	-	-	-	-	I

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Alliaria petiolata</i>	-	-	2	-	-	/
<i>Amblysegium serpens</i>	-	2	-	-	-	/
<i>Arum maculatum</i>	-	2	-	-	-	/
<i>Geranium robertianum</i>	-	-	-	2	-	/
<i>Lonicera periclymenum</i>	-	-	-	2	-	/
<i>Phyllitis scolopendrium</i>	-	-	-	2	-	/
<i>Vicia sativa</i>	-	-	-	2	-	/
<i>Aesculus hippocastanum</i>	-	1	-	-	-	/
<i>Carex pendula</i>	-	-	-	-	1	/
<i>Chamerion angustifolium</i>	-	-	-	1		/
<i>Cornus sanguinea</i>	1		-	-	-	/
<i>Cotoneaster horizontalis</i>	-	-	-	-	1	/
<i>Phyllitis scolopendrium</i>	-	-	-	2	-	/
<i>Vicia sativa</i>	-	-	-	2	-	/
<i>Aesculus hippocastanum</i>	-	1	-	-	-	/
<i>Carex pendula</i>	-	-	-	-	1	/
<i>Chamerion angustifolium</i>	-	-	-	1		/
<i>Cornus sanguinea</i>	1		-	-	-	/
<i>Cotoneaster horizontalis</i>	-	-	-	-	1	/
<i>Heracleum sphondylium</i>	-	-	1	-	-	/
<i>Leucanthemum vulgare</i>	-	-	-	-	1	/
<i>Lonicera japonica</i>	-	-	-	1	-	/
<i>Melilotus officinalis</i>	-	-	-	1	-	/
<i>Ribes rubrum</i>	-	-	-	1	-	/
<i>Rosa canina</i>	-	-	-	1	-	/
<i>Senecio erucifolius</i>	-	-	-	1	-	/
<i>Taraxacum sect. Ruderalia</i>	-	-	-	1	-	/
<i>Urtica dioica</i>	-	-	-	1	-	/

Table 8: Frequency table for W10a

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	

Species	Quadrat locations					Frequency
<i>Quercus robur</i>	9					V
<i>Sorbus intermedia</i>	4					V
<i>Sorbus aria</i>	1					V
<i>Crataegus monogyna</i>	3					V
<i>Prunus avium</i>	3					V
<i>Aesculus hippocastanum</i>	2					V
<i>Prunus spinosa</i>	1					V
<i>Rubus fruticosus agg.</i>	10					V
<i>Hedera helix</i>	4					V
<i>Galium aparine</i>	3					V
<i>Geum urbanum</i>	3					V
<i>Dryopteris filix-mas</i>	1					V
<i>Fraxinus excelsior</i>	1					V
<i>Lonicera periclymenum</i>	1					V
<i>Prunus avium</i>	1					V
<i>Ribes rubrum</i>	1					V
<i>Veronica hederifolia</i>	1					V

Table 9: Frequency table for MG1e

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Poa pratensis</i>	6	6				V
<i>Festuca rubra</i>	6	5				V
<i>Arrhenatherum elatius</i>	6	3				V
<i>Achillea millefolium</i>	5	4				V
<i>Daucus carota ssp. carota</i>	3	3				V
<i>Leucanthemum vulgare</i>	3	2				V
<i>Hypericum perforatum</i>	2	1				V
<i>Medicago lupulina</i>	2	1				V
<i>Rubus fruticosus agg.</i>	2	1				V
<i>Trisetum flavescens</i>	-	7				III
<i>Centaurea nigra</i>	5	-				III
<i>Lotus corniculatus</i>	-	5				III

Species	Quadrat locations					Frequency
<i>Pseudoscleropodium purum</i>	5	-				III
<i>Aster ×salignus</i>	-	4				III
<i>Plantago lanceolata</i>	4	-				III
<i>Dactylis glomerata</i>	-	3				III
<i>Ranunculus acris</i>	-	3				III
<i>Plantago lanceolata</i>	-	2				III
<i>Trifolium pratense</i>	-	2				III
<i>Vicia hirsuta</i>	2	-				III
<i>Vicia sativa</i>	2	-				III
<i>Artemisia vulgaris</i>	-	1				III
<i>Cerastium fontanum</i>	-	1				III
<i>Crataegus monogyna</i>	-	1				III
<i>Lathyrus nissolia</i>	-	1				III
<i>Lathyrus pratensis</i>	-	1				III
<i>Melilotus officinalis</i>	-	1				III
<i>Rumex acetosa</i>	1	-				III
<i>Trifolium medium</i>	-	1				III
<i>Tussilago farfara</i>	-	1				III

Table 10: Frequency table for MG1 open variant

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Arrhenatherum elatius</i>	6	3	6	6	7	V
<i>Brachythecium rutabulum</i>	3	6	2	5	3	V
<i>Daucus carota</i> ssp. <i>carota</i>	4	3	3	5	5	V
<i>Rubus fruticosus</i> agg.	3	5	2	-	2	IV
<i>Didymodon species</i>	-	3	4	3	3	IV
<i>Leucanthemum vulgare</i>	3	-	3	2	4	IV
<i>Hypericum perforatum</i>	-	1	4	2	2	IV
<i>Plantago lanceolata</i>	-	4	2	1	2	IV
<i>Geranium robertianum</i>	2	-	5	4	-	III
<i>Bryum capillare</i>	4	-	2	3	-	III
<i>Hypnum cupressiforme</i>	4	2	4	-	-	III

Species	Quadrat locations					Frequency
<i>Poa pratensis</i>	2	4	-	3	-	III
<i>Cerastium fontanum</i>	1	1	-	-	2	III
<i>Taraxacum sect. Ruderalia</i>	1	-	2	1	-	III
<i>Pseudoscleropodium purum</i>	2	6	-	-	-	II
<i>Trisetum flavescens</i>	-	-	-	4	4	II
<i>Hieracium species</i>	3	2	-	-	-	II
<i>Galium aparine</i>	2	2	-	-	-	II
<i>Vicia hirsuta</i>	2	2	-	-	-	II
<i>Cladonia species</i>	1	-	2	-	-	II
<i>Lactuca virosa</i>	1	2	-	-	-	II
<i>Linaria vulgaris</i>	1	2	-	-	-	II
<i>Rumex acetosa</i>	1	2	-	-	-	II
<i>Dipsacus fullonum</i>	-	-	-	1	1	II
<i>Fraxinus excelsior</i>	1	-	1	-	-	II
<i>Hypochaeris radicata</i>	1	-	1	-	-	II
<i>Vicia sativa</i>	1	-	-	1	-	II
<i>Achillea millefolium</i>	-	4	-	-	-	I
<i>Aster ×salignus</i>	-	-	-	4	-	I
<i>Festuca ovina</i>	-	3	-	-	-	I
<i>Festuca rubra</i>	-	3	-	-	-	I
<i>Kindbergia praelonga</i>	-	-	-	3	-	I
<i>Syntrichia intermedia</i>	3	-	-	-	-	I
<i>Tortula muralis</i>	3	-	-	-	-	I
<i>Cardamine hirsuta</i>	2	-	-	-	-	I
<i>Ceratodon purpureus</i>	-	-	2	-	-	I
<i>Linaria purpurea</i>	-	-	-	-	2	I
<i>Stellaria holostea</i>	2	-	-	-	-	I
<i>Vulpia bromoides</i>	-	-	-	-	2	I
<i>Vulpia myuros</i>	-	2	-	-	-	I
<i>Amblysegium serpens</i>	-	1	-	-	-	I
<i>Anisantha sterilis</i>	-	-	-	-	1	I
<i>Artemisia vulgaris</i>	-	-	-	-	1	I
<i>Betula pendula</i>	-	-	-	1	-	I

Species	Quadrat locations					Frequency
<i>Centaurea nigra</i>	1	-	-	-	-	1
<i>Cirsium arvense</i>	-	-	-	1	-	1
<i>Cirsium vulgare</i>	1	-	-	-	-	1
<i>Crepis vesicaria</i>	1	-	-	-	-	1
<i>Euphrasia species</i>	-	-	-	1	-	1
<i>Geum urbanum</i>	-	-	-	-	1	1
<i>Lapsana communis</i>	-	-	1	-	-	1
<i>Lepidium draba</i>	-	-	-	1	-	1
<i>Myosotis arvensis</i>	-	-	-	-	1	1
<i>Plantago major</i>	1	-	-	-	-	1
<i>Potentilla reptans</i>	-	1	-	-	-	1
<i>Schistidium crassipilum</i>	-	-	-	-	1	1
<i>Senecio erucifolius</i>	-	-	-	1	-	1
<i>Senecio squalidus</i>	-	1	-	-	-	1
<i>Syntrichia ruralis ssp. ruralis</i>	1	-	-	-	-	1
<i>Tragopogon pratensis</i>	1	-	-	-	-	1
Bare ground	7	6	5	5	5	

Table 11: Frequency table for OV25b

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Cirsium arvense</i>	2	8	6			V
<i>Galium aparine</i>	5	4	3			V
<i>Artemisia vulgaris</i>	4	1	4			V
<i>Calystegia silvatica</i>	-	7	8			IV
<i>Anthriscus sylvestris</i>	6	-	5			IV
<i>Rubus fruticosus agg.</i>	2	6	-			IV
<i>Urtica dioica</i>	5	2	-			IV
<i>Rumex sanguineus</i>	1	-	4			IV
<i>Aster ×salignus</i>	-	1	3			IV
<i>Plantago lanceolata</i>	1	-	3			IV
<i>Medicago lupulina</i>	1	-	2			IV
<i>Poa trivialis</i>	1	-	2			IV

Species	Quadrat locations					Frequency
<i>Robinia pseudoacacia</i>	2	1	-			IV
<i>Epilobium tetragonum</i>	1	1	-			IV
<i>Geranium robertianum</i>	1	1	-			IV
<i>Anisantha sterilis</i>	6	-	-			II
<i>Equisetum arvense</i>	6	-	-			II
<i>Galega officinalis</i>	-	2	-			II
<i>Heracleum sphondylium</i>	2	-	-			II
<i>Oxyrrhyncium hians</i>	2	-	-			II
<i>Picris hieracioides</i>	-	-	2			II
<i>Plantago major</i>	2	-	-			II
<i>Acer pseudoplatanus</i>	1	-	-			II
<i>Cardamine hirsuta</i>	-	-	1			II
<i>Epilobium ciliatum</i>	-	1	-			II
<i>Festuca rubra</i>	-	-	1			II
<i>Helminthotheca echioides</i>	1	-	-			II
<i>Hirschfeldia incana</i>	1	-	-			II
<i>Holcus lanatus</i>	-	-	1			II
<i>Lolium perenne</i>	-	-	1			II
<i>Rumex crispus</i>	-	-	1			II
<i>Silene xhampeana</i>	1	-	-			II
<i>Silene dioica</i>	-	1	-			II
<i>Stachys sylvatica</i>	-	1	-			II
<i>Taraxacum sect. Ruderalia</i>	1	-	-			II

Table 12: Frequency table for *Galega officinalis*-*Melilotus officinalis* community

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Galega officinalis</i>	5	9				V
<i>Melilotus officinalis</i>	8	4				V
<i>Daucus carota ssp. carota</i>	2	3				V
<i>Medicago lupulina</i>	3	2				V
<i>Poa trivialis</i>	1	3				V
<i>Plantago lanceolata</i>	2	2				V

Species	Quadrat locations					Frequency
<i>Anisantha sterilis</i>	1	2				V
<i>Leucanthemum vulgare</i>	1	2				V
<i>Picris hieracioides</i>	1	2				V
<i>Rubus fruticosus agg.</i>	1	2				V
<i>Holcus lanatus</i>	1	1				V
<i>Hypericum perforatum</i>	1	1				V
<i>Aster ×salignus</i>	4	-				III
<i>Bromus hordeaceus</i>	-	3				III
<i>Artemisia vulgaris</i>	-	2				III
<i>Galium aparine</i>	-	2				III
<i>Ranunculus acris</i>	-	2				III
<i>Trifolium campestre</i>	2	-				III
<i>Anthyllis vulneraria</i>	1	-				III
<i>Arrhenatherum elatius</i>	-	1				III
<i>Cerastium fontanum</i>	-	1				III
<i>Chamerion angustifolium</i>	1	-				III
<i>Geranium dissectum</i>	-	1				III
<i>Hirschfeldia incana</i>	-	1				III
<i>Plantago major</i>	1	-				III
<i>Poa annua</i>	1	-				III
<i>Salix cinerea</i>	1	-				III
<i>Taraxacum sect. Ruderalia</i>	-	1				III

Table 13: Frequency table for open mosaic 2

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Arrhenatherum elatius</i>	2	7	5	4	6	V
<i>Anthyllis vulneraria</i>	1	2	2	6	2	V
<i>Cf. Homalothecium lutescens</i>	3	2	5	4	3	V
<i>Daucus carota ssp. Carota</i>	3	3	3	3	3	V
<i>Leucanthemum vulgare</i>	8	2	5	3	-	IV
<i>Origanum vulgare</i>	6	5	7	4	-	IV
<i>Rubus fruticosus agg.</i>	6	3	2	2	-	IV

Species	Quadrat locations					Frequency
<i>Cerastium fontanum</i>	-	3	3	3	2	IV
<i>Picris hieracioides</i>	2	2	-	-	7	III
<i>Didymodon species</i>	5	3	-	-	3	III
<i>Festuca ovina</i>	1	-	4	-	4	III
<i>Holcus lanatus</i>	-	2	3	3	-	III
<i>Aster ×salignus</i>	1	3	-	-	1	III
<i>Oenathera species</i>	1	1	2	-	-	III
<i>Achillea millefolium</i>	-	1	1	1	-	III
<i>Plantago lanceolata</i>	1	-	1	1	-	III
<i>Festuca rubra</i>	-	-	2	6	-	II
<i>Poa pratensis</i>	-	-	-	4	2	II
<i>Anisantha sterilis</i>	-	-	1	-	3	II
<i>Hypericum perforatum</i>	2	-	2	-	-	II
<i>Hypochaeris radicata</i>	-	-	2	-	2	II
<i>Brachythecium rutabulum</i>	-	1	-	-	2	II
<i>Buddleja davidii</i>	-	-	-	1	2	II
<i>Linaria vulgaris</i>	-	-	2	-	1	II
<i>Lotus corniculatus</i>	-	-	1	2	-	II
<i>Tortula muralis</i>	-	1	1	-	-	II
<i>Veronica arvensis</i>	-	1	1	-	-	II
<i>Arenaria serpyllifolia</i>	-	-	-	-	3	I
<i>Geranium robertianum</i>	-	3	-	-	-	I
<i>Medicago lupulina</i>	-	-	-	3	-	I
<i>Poterium sanguisorba ssp. sanguisorba</i>	3	-	-	-	-	I
<i>Hieracium species</i>	-	-	2	-	-	I
<i>Hypnum cupressiforme</i>	-	2	-	-	-	I
<i>Leontodon saxatilis</i>	-	-	-	-	2	I
<i>Oxyrrhynchium hians</i>	-	2	-	-	-	I
<i>Trifolium dubium</i>	-	-	-	2	-	I
<i>Bryum capillare</i>	1	-	-	-	-	I
<i>Campylopus introflexus</i>	-	-	1	-	-	I
<i>Cardamine hirsuta</i>	-	-	1	-	-	I
<i>Catapodium rigidum</i>	-	-	1	-	-	I

Species	Quadrat locations					Frequency
<i>Cerastium diffusum</i>	-	-	1	-	-	1
<i>Crataegus monogyna</i>	-	1	-	-	-	1
<i>Erophila verna</i>	1	-	-	-	-	1
<i>Fragaria moschata</i>	-	-	-	1	-	1
<i>Galium mollugo</i>	-	-	-	1	-	1
<i>Geum urbanum</i>	-	1	-	-	-	1
<i>Hirschfeldia incana</i>	-	1	-	-	-	1
<i>Linaria purpurea</i>	1	-	-	-	-	1
<i>Poa trivialis</i>	1	-	-	-	-	1
<i>Potentilla reptans</i>	-	-	-	1	-	1
<i>Quercus robur</i>	-	-	1	-	-	1
<i>Salix cinerea</i>	-	-	1	-	-	1
<i>Senecio jacobaea</i>	-	-	-	1	-	1
<i>Senecio vulgaris</i>	-	1	-	-	-	1
<i>Taraxacum sect. Ruderalia</i>	-	-	1	-	-	1
<i>Verbascum thapsus</i>	-	1	-	-	-	1
<i>Vicia sativa</i>	-	-	1	-	-	1
Bare ground	4	5	4	4	4	

Table 14: Frequency table for open mosaic 3

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Didymodon species</i>	7					V
<i>Anisantha sterilis</i>	3					V
<i>Aster ×salignus</i>	3					V
<i>Cerastium fontanum</i>	3					V
<i>Erophila verna</i>	3					V
<i>Hypochaeris radicata</i>	3					V
<i>Linum catharticum</i>	3					V
<i>Lolium perenne</i>	3					V
<i>Tortula muralis</i>	3					V
<i>Veronica arvensis</i>	3					V

Species	Quadrat locations					Frequency
<i>Vulpia bromoides</i>	3					V
<i>Agrostis capillaris</i>	2					V
<i>Brachythecium rutabulum</i>	2					V
<i>Cladonia species</i>	2					V
<i>Hypericum perforatum</i>	2					V
<i>Arabidopsis thaliana</i>	1					V
<i>Holcus lanatus</i>	1					V
<i>Leucanthemum vulgare</i>	1					V
<i>Saxifraga tridactylites</i>	1					V
<i>Taraxacum sect. Ruderalia</i>	1					V
Bare ground	7					

## CFA6

### Copthall Covert

- 5.4.32 Copthall Covert is an area of semi-natural broad-leaved woodland (one or two planted pine trees are insufficient to give it a mixed woodland character). It is isolated by agricultural fields. It has a canopy of ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*) with very few other species, over a shrub-layer in which hawthorn (*Crataegus monogyna*) is the single most abundant species, though elder (*Sambucus nigra*) and other species are frequent. Towards the western end of the wood, wild privet (*Ligustrum vulgare*) is locally abundant, which might be thought to suggest calcicolous tendencies in the vegetation, but nothing else here does so. The field-layer is for the most part overwhelmingly dominated by dense bramble (*Rubus fruticosus* agg.) to the exclusion of almost everything else. Towards the wood edges and where there are ditches or banks a wider range of shade-tolerant herbs occur, e.g. lords-and-ladies (*Arum maculatum*), cleavers (*Galium aparine*), red campion (*Silene dioica*).
- 5.4.33 All the canopy trees in the wood are standards. A few of the hazels (*Corylus avellana*) in the shrub-layer have historically been coppiced, but the stools are relatively small (up to about 0.6m diameter). There are no significant earthworks (though surveyors could not see large areas under bramble), and especially no significant boundary banks. There are few if any ancient woodland indicator species among the shade-tolerant herbs, and the few species that might be regarded as such, i.e. bluebell (*Hyacinthoides non-scripta*), dog's mercury (*Mercurialis perennis*), three-nerved sandwort (*Moehringia trinervia*), are weak indicators occasionally encountered in hedges and secondary woodland in this area. The field evidence therefore suggests that this is not ancient woodland, i.e. woodland dating from before 1600. It is rather typical of oak plantation woods dating from around the Napoleonic, or early Victorian eras. However historical management for timber standards can obscure ancient

woodland field signs, and documentary research would be needed to fully confirm that it is not ancient.

- 5.4.34 The woodland conforms to the NVC type W8d *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Hedera helix* sub-community. It is unusual in having extremely little ivy (*Hedera helix*), and it has some affinities with thorn scrub vegetation types such as W21 *Crataegus monogyna*-*Hedera helix* scrub, but nevertheless represents W8, which is the common NVC type for secondary woodlands in farmland on neutral soils.

Table 15: Frequency table for Copthall Covert

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Quercus robur</i> (c)	8					
<i>Fraxinus excelsior</i> (c)	7					
<i>Acer campestre</i> (c)	1					
<i>Alnus glutinosa</i> (c)	1					
<i>Pinus sylvestris</i> (c)	1					
<i>Crataegus monogyna</i> (s)	4					
<i>Ligustrum vulgare</i> (s)	3					
<i>Prunus spinosa</i> (s)	3					
<i>Acer campestre</i> (s)	2					
<i>Corylus avellana</i> (s)	2					
<i>Fraxinus excelsior</i> (s)	2					
<i>Sambucus nigra</i> (s)	2					
<i>Ilex aquifolium</i> (s)	1					
<i>Lonicera periclymenum</i> (s)	1					
<i>Rubus fruticosus</i> agg. (s/g)	10	10	5	5	8	V
<i>Galium aparine</i>	3	3	2	1	5	V
<i>Silene dioica</i>	-	1	5	6	3	IV
<i>Kindbergia praelonga</i>	2	-	1	2	2	IV
<i>Arum maculatum</i>	1	-	-	3	1	III
<i>Dryopteris filix-mas</i>	1	-	1	1	-	III
<i>Moehringia trinervia</i>	-	1	-	1	1	III
<i>Urtica dioica</i>	-	-	-	1	8	II
<i>Rumex sanguineus</i>	-	-	-	4	3	II
<i>Hyacinthoides non-scripta</i>	2	-	-	-	2	II
<i>Brachythecium rutabulum</i>	-	-	-	2	1	II

Species	Quadrat locations					Frequency
<i>Holcus lanatus</i>	-	-	-	1	1	II
<i>Mnium hornum</i>	-	-	-	1	1	II
<i>Poa trivialis</i>	-	-	-	1	1	II
<i>Glechoma hederacea</i>	-	-	2	-	-	I
<i>Bromopsis ramosa</i>	-	-	-	-	1	I
<i>Dryopteris dilatata</i>	-	-	-	1	-	I
<i>Geranium robertianum</i>	-	-	-	-	3	I
<i>Hedera helix (g)</i>	-	-	-	1	-	I
<i>Mercurialis perennis</i>	-	-	1	-	-	I
<i>Plagiomnium undulatum</i>	-	-	1	-	-	I
<i>Tamus communis</i>	-	-	1	-	-	I

Matching coefficients: W21b 54.9, W8b 53.1, W8d 52.9, W8 undifferentiated 52.7, W21 undifferentiated 51.7, W21a 51.6, W6d 50.7, W8a 49.2, W8e 49.1, W6 undifferentiated 48.9. Diagnosis. This mature woodland is clearly not W21 *Crataegus monogyna*-*Hedera helix* scrub. Resemblances to it may result from the high abundance of *Rubus fruticosus* agg. due to the long narrow shape of the wood, which allows light in, and from the general lack of *Hedera helix*, which would normally be abundant in a secondary woodland like this. Neither is this species-poor, *Rubus*-dominated woodland W8b *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Anemone nemorosa* sub-community. From W8d *Fraxinus excelsior*-*Acer campestre*-*Mercurialis perennis* woodland, *Hedera helix* sub-community it differs only in the general lack of *Hedera helix*, and this is clearly the best NVC diagnosis.

### Rail land

- 5.4.35 This includes rail land near South Ruislip vent shaft main compound and rail land between High Street Ickenham to Harvil Road.

### Overview

- 5.4.36 The survey site comprised two sections of rail land: approximately 2.53km between Ickenham Road and Harvil Road (NWR Areas 10-11); and 0.6km at the South Ruislip vent shaft main compound (NWR Area 9). The survey took in all National Rail land on either side of the railway where accessible.
- 5.4.37 The rail embankments between Ickenham Road and Harvil Road are largely dominated by secondary scrub comprising three main types, as well as intermediates and mosaics between them: bramble scrub; mixed thorn scrub typically with hawthorn; and scrub woodland transitional between thorn scrub and pedunculate oak woodland. There is typically a 1-2m wide strip of rough grassland at the trackside, with two larger areas of rough grassland on embankments either side of Breakspear Road South. Other vegetation types recorded, mainly species-poor tall ruderal, were small in extent.
- 5.4.38 Rail land at the South Ruislip vent shaft main compound consists of a narrow strip to the north of the railway, which is largely dominated by scrub and plantation woodland. The scrub is of secondary origin and comprises three main types: mixed

thorn scrub dominated by hawthorn; bramble scrub; and one small stand of Butterfly-bush scrub. The plantation woodland is similar in composition to the thorn scrub, but with an upper storey of *Populus cf. xberolinensis* (Berlin poplar). There is a one to two meter strip of species-poor rough grassland at the trackside.

5.4.39 The following NVC and non-NVC vegetation types were recorded:

- scrub referable to the NVC type W21a *Crataegus monogyna-Hedera helix* scrub, *Hedera helix-Urtica dioica* sub-community;
- secondary woodland transitional between W21a and W10a *Quercus robur-Pteridium aquilinum-Rubus fruticosus* woodland, typical sub-community;
- poplar plantations otherwise similar in composition to W21a scrub;
- scrub referable to the NVC type W22a *Prunus spinosa-Rubus fruticosus* scrub, *Hedera helix-Silene dioica* sub-community;
- scrub broadly referable to the NVC type W24 *Rubus fruticosus-Holcus lanatus* underscrub;
- scrub intermediate between w24 and W21a;
- scrub broadly referable to the NVC type W25 *Pteridium aquilinum-Rubus fruticosus* underscrub;
- scrub referable to the proposed NVC type *Sambucus nigra-Urtica dioica* scrub;
- sown grassland referable to the NVC type MG1a *Arrhenatherum elatius* grassland, *Festuca rubra* sub-community;
- grassland broadly referable to the NVC type MG1 *Arrhenatherum elatius* grassland undifferentiated;
- tall ruderal vegetation referable to the NVC type OV24b *Urtica dioica-Galium aparine* community, *Arrhenatherum elatius-Rubus fruticosus* sub-community;
- tall ruderal vegetation referable to the NVC type OV26 *Epilobium hirsutum* community;
- tall ruderal vegetation referable to the NVC type OV27b *Epilobium angustifolium* community, *Urtica dioica-Cirsium arvense* sub-community;
- tall ruderal referable to the proposed NVC type *Fallopia japonica* community;and
- open mosaic habitat not referable to an NVC type, recorded here as 'Open Mosaic 1'.

### Woodland and scrub

5.4.40 Mixed thorn scrub is among the most abundant vegetation types along the rail embankments in both CF5 and CF6. It is secondary in origin and typically comprises some hawthorn (*Crataegus monogyna*) together with a variety of other shrubs and tree saplings at different levels of abundance, including sycamore (*Acer*

*pseudoplatanus*), ash (*Fraxinus excelsior*), wild cherry (*Prunus avium*), grey willow (*Salix cinerea*) and English elm (*Ulmus procera*). It varies in height between 4m and 12m and often occurs in mosaic and transitions with bramble (*Rubus fruticosus* agg.) scrub and developing pedunculate oak (*Quercus robur*) woodland. The field-layer in denser scrub is typically heavily shaded and species-poor, comprising a carpet of ivy (*Hedera helix*) with frequent tree saplings and a low to moderate cover of bramble (*Rubus fruticosus* agg.). In stands where the cover of ivy is lower, other species such as cow parsley (*Anthriscus sylvestris*), *Kindbergia praelonga* and bramble can be prominent. A wide range of other species of both shady and open habitats occurs, but they are rarely very abundant. These include rough-stalked feather-moss (*Brachythecium rutabulum*), cleavers (*Galium aparine*), wood dock (*Rumex sanguineus*), stone-parsley (*Sison amomum*) and hedge woundwort (*Stachys sylvatica*). This scrub is clearly referable to the NVC type W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community.

- 5.4.41 Plantation woodlands with an upper storey of Berlin poplar (*Populus* cf. *xberolinensis*) occur along the rail corridor west of South Ruislip Station. The woodland has been recorded separately as poplar plantations, though it is otherwise similar in composition to W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community.
- 5.4.42 Secondary woodland has developed extensively along the railway embankments between Ickenham Road and Harvil Road, and in isolated stands elsewhere. The majority of this woodland is transitional between thorn scrub and pedunculate oak (*Quercus robur*) woodland with a single storey between 10 and 15m tall, which is not differentiated into canopy and shrub-layers. It is typically dominated by a mixture of pedunculate oak and hawthorn (*Crataegus monogyna*) with sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and blackthorn (*Prunus spinosa*) locally prominent. Other frequent shrubs are dog-rose (*Rosa canina*) and goat willow (*Salix caprea*). The field-layer is species-poor and often quite sparse, or locally dominated by ivy (*Hedera helix*), with bramble (*Rubus fruticosus* agg.) as a constant and occasionally prominent component. Tree saplings are frequent and there is often some rough-stalked feather-moss (*Brachythecium rutabulum*), cleavers (*Galium aparine*), *Kindbergia praelonga* and common nettle (*Urtica dioica*). Shade tolerant herbs such as bugle (*Ajuga reptans*), lords-and-ladies (*Arum maculatum*), wood avens (*Geum urbanum*) and wood dock (*Rumex sanguineus*) are widely scattered, but rarely very abundant. This woodland is transitional between W21a *Crataegus monogyna*-*Hedera helix* scrub, *Hedera helix*-*Urtica dioica* sub-community and W10a *Quercus robur*-*Pteridium aquilinum*-*Rubus fruticosus* woodland, typical sub-community, which it is what it will succeed to if left to develop.
- 5.4.43 Locally, there are small areas of scrub dominated by densely suckering blackthorn (*Prunus spinosa*). This is referable to the NVC type W22a *Prunus spinosa*-*Rubus fruticosus* scrub, *Hedera helix*-*Silene dioica* sub-community.
- 5.4.44 Dense stands of bramble (*Rubus fruticosus* agg.) occur frequently throughout the rail corridor either in pure stands or, more often, in mosaics and transitions with grassland and other scrub types. Bramble is overwhelmingly dominant in this vegetation type with only few frequent associates. Among these are the shrubs and tree saplings

hawthorn (*Crataegus monogyna*), pedunculate oak (*Quercus robur*) and dog-rose (*Rosa canina*), and the tall herbs false oat-grass (*Arrhenatherum elatius*), hogweed (*Heracleum sphondylium*) and common nettle (*Urtica dioica*). This scrub is broadly referable to the NVC type W24 *Rubus fruticosus*-*Holcus lanatus* underscrub, but could not generally be assigned to one or other of the two sub-communities.

5.4.45 A single stand of bracken (*Pteridium aquilinum*)-dominated vegetation was recorded amongst thorn scrub west of Breakspear Road South. In addition to bracken, cleavers (*Galium aparine*), bramble (*Rubus fruticosus* agg.) and common nettle (*Urtica dioica*) are abundant, but there are few other species. This vegetation is referable to the NVC type W25 *Pteridium aquilinum*-*Rubus fruticosus* underscrub, though it lacks the species that differentiate the two sub-communities.

5.4.46 Semi-ruderal scrub dominated by butterfly bush (*Buddleja davidii*) occurs in one place west of South Ruislip Station. It is referable to the proposed NVC type *Sambucus nigra*-*Urtica dioica* scrub.

### Grasslands

5.4.47 Embankments either side of Breakspear Road South have been sown with grassland seed mixtures and have developed into rough grassland. The grasslands at Breakspear Road South are overwhelmingly dominated by the grass red fescue (*Festuca rubra*) with smaller amounts of false oat-grass (*Arrhenatherum elatius*) and smooth meadow-grass (*Poa pratensis*). Broad-leaved herbs are not a major component in the sward and only a few are at all frequent: creeping thistle (*Cirsium arvense*), meadow vetchling (*Lathyrus pratensis*), field forget-me-not (*Myosotis arvensis*), hoary ragwort (*Senecio erucifolius*), common dandelion (*Taraxacum* sect. *Ruderalia*) and common vetch (*Vicia sativa*). A wider range of species occur at lower frequencies, but they are mostly opportunist weeds rather than established grassland species. This grassland is referable to the NVC type MG1a *Arrhenatherum elatius* grassland, *Festuca rubra* sub-community.

5.4.48 Species-poor rough grassland dominated by false oat-grass (*Arrhenatherum elatius*) has developed naturally in narrow strips throughout the rail corridor, for example along ballast at the extreme track edge. Apart from false oat-grass (*Arrhenatherum elatius*), there is usually a handful of other herbs including yarrow (*Achillea millefolium*), wood avens (*Geum urbanum*), oxeye daisy (*Leucanthemum vulgare*), common toadflax (*Linaria vulgaris*) and bramble (*Rubus fruticosus* agg.). The grassland is referable to the NVC type MG1 *Arrhenatherum elatius* grassland, but it is rather ill-defined and not clearly assignable to a sub-community.

### Vegetation of open habitats

5.4.49 Tall ruderal vegetation dominated by common nettle (*Urtica dioica*) occurs occasionally as small patches and in transitions with bramble (*Rubus fruticosus* agg.) scrub. Other species characterising this vegetation type include bindweed species (*Calystegia* species), cleavers (*Galium aparine*) and bramble. It is mostly referable to the NVC type OV24b *Urtica dioica*-*Galium aparine* community, *Arrhenatherum elatius*-*Rubus fruticosus* sub-community, though small stands of pure common nettle are likely to be the OV24a *Urtica dioica*-*Galium aparine* community, typical sub-community.

- 5.4.50 Tall ruderal vegetation dominated by great willowherb (*Epilobium hirsutum*) occurs in one place. It is broadly referable to the NVC type OV26 *Epilobium hirsutum* community.
- 5.4.51 Tall ruderal vegetation dominated by rosebay willowherb (*Chamerion angustifolium*) occurs fairly frequently in small to moderate-sized patches. Other species occurring alongside rosebay willowherb include common nettle (*Urtica dioica*) and bramble (*Rubus fruticosus* agg.), which characterises the OV27b *Epilobium angustifolium* community, *Urtica dioica*-*Cirsium arvense* sub-community.
- 5.4.52 Stands of Japanese knotweed (*Fallopia japonica*) occur to the east of Harvil Road. They are referable to the proposed NVC type *Fallopia japonica* community.
- 5.4.53 A small area of very short, open vegetation occurs along a disused siding west of Ickenham Road. The acrocarpous moss *Didymodon* species accounts for most of the cover and the only herbs recorded were the annual species thyme-leaved sandwort (*Arenaria serpyllifolia*), common whitlowgrass (*Erophila verna*) and annual meadow-grass (*Poa annua*). The vegetation had been scorched by a period of hot, dry weather and other spring ephemerals may have died back and been missed. Open vegetation of this kind is not adequately covered by the NVC, and is recorded here as 'Open Mosaic 1'.
- 5.4.54 The frequency tables for vegetation communities at rail land near South Ruislip vent shaft main compound and rail land between High Street Ickenham to Harvil Road (all in CFA6) are presented in the tables below.

Table 16: Frequency table for W21a

Species	Quadrat locations					Frequency
		Q1	Q2	Q3	Q4	Q5
<i>Crataegus monogyna</i>	4	-	1	9	6	IV
<i>Salix cinerea</i>	5	4	7	-	-	III
<i>Prunus spinosa</i>	1	-	-	4	4	III
<i>Fraxinus excelsior</i>	7	-	-	-	8	II
<i>Ulmus procera</i>	-	-	4	-	6	II
<i>Sambucus nigra</i>	-	-	-	1	1	II
<i>Laburnum anagyroides</i>	-	9	-	-	-	I
<i>Salix triandra</i>	-	-	7	-	-	I
<i>Salix caprea</i>	5	-	-	-	-	I
<i>Prunus avium</i>	-	-	-	4	-	I
<i>Rosa canina</i>	4	-	-	-	-	I
<i>Rosa arvensis</i>	-	-	2	-	-	I
<i>Acer campestre</i>	-	-	-	1	-	I
<i>Cornus sanguinea</i>	1	-	-	-	-	I

Species	Quadrat locations					Frequency
<i>Hedera helix</i>	9	2	5	10	10	V
<i>Fraxinus excelsior</i>	1	4	2	2	3	V
<i>Rubus fruticosus</i> agg.	4	5	-	2	2	IV
<i>Brachythecium rutabulum</i>	-	4	3	-	1	III
<i>Prunus avium</i>	-	1	-	1	2	III
<i>Galium aparine</i>	-	-	3	-	3	II
<i>Rumex sanguineus</i>	-	2	3	-	-	II
<i>Stachys sylvatica</i>	2	-	2	-	-	II
<i>Kindbergia praelonga</i>	-	-	3	-	1	II
<i>Prunus spinosa</i>	-	-	-	2	2	II
<i>Taraxacum</i> sect. <i>Ruderalia</i>	-	2	-	1	-	II
<i>Fissidens</i> species	-	1	1	-	-	II
<i>Pentaglottis sempervirens</i>	-	1	-	-	1	II
<i>Ribes rubrum</i>	-	-	-	1	1	II
<i>Urtica dioica</i>	-	-	8	-	-	I
<i>Kindbergia praelonga</i>	-	7	-	-	-	I
<i>Anthriscus sylvestris</i>	-	-	-	4	-	I
<i>Rhytidiadelphus squarrosus</i>	-	4	-	-	-	I
<i>Geum urbanum</i>	-	3	-	-	-	I
<i>Poa trivialis</i>	-	3	-	-	-	I
<i>Primula veris</i>	-	3	-	-	-	I
<i>Arum maculatum</i>	-	-	2	-	-	I
<i>Festuca rubra</i>	2	-	-	-	-	I
<i>Phyllitis scolopendrium</i>	-	-	2	-	-	I
<i>Plagiomnium undulatum</i>	-	2	-	-	-	I
<i>Rosa canina</i>	-	2	-	-	-	I
<i>Sambucus nigra</i>	-	-	-	2	-	I
<i>Acer campestre</i>	-	1	-	-	-	I
<i>Acer pseudoplatanus</i>	-	-	-	-	1	I
<i>Cardamine hirsuta</i>	-	1	-	-	-	I
<i>Crataegus monogyna</i>	-	-	-	-	1	I
<i>Dryopteris filix-mas</i>	-	-	1	-	-	I
<i>Elytrigia repens</i>	1	-	-	-	-	I

Species	Quadrat locations					Frequency
<i>Epilobium montanum</i>	-	1	-	-	-	1
<i>Heracleum sphondylium</i>	-	1	-	-	-	1
<i>Linaria vulgaris</i>	1	-	-	-	-	1
<i>Potentilla reptans</i>	1	-	-	-	-	1
<i>Quercus robur</i>	-	1	-	-	-	1
<i>Rosa canina</i>	-	-	1	-	-	1
<i>Rumex sanguineus</i>	-	-	-	1	-	1
<i>Veronica hederifolia</i>	-	1	-	-	-	1

Table 17: Frequency table for poplar plantations

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Populus cf. xberolinensis</i>	8					V
<i>Crataegus monogyna</i>	8					V
<i>Salix caprea</i>	4					V
<i>Populus cf. xberolinensis</i>	2					V
<i>Cotoneaster lacteus</i>	1					V
<i>Ligustrum vulgare</i>	1					V
<i>Quercus robur</i>	1					V
<i>Sison amomum</i>	7					V
<i>Rubus fruticosus agg.</i>	5					V
<i>Arrhenatherum elatius</i>	4					V
<i>Fraxinus excelsior</i>	4					V
<i>Clematis vitalba</i>	3					V
<i>Galium aparine</i>	3					V
<i>Ligustrum vulgare</i>	3					V
<i>Cirsium arvense</i>	2					V
<i>Geranium robertianum</i>	2					V
<i>Geum urbanum</i>	2					V
<i>Hedera helix</i>	2					V
<i>Leucanthemum vulgare</i>	2					V
<i>Sedum rupestre</i>	2					V
<i>Taraxacum sect. Ruderalia</i>	2					V

Species	Quadrat locations					Frequency
<i>Achillea millefolium</i>	1					V
<i>Centaurea nigra</i>	1					V
<i>Epilobium montanum</i>	1					V
<i>Ilex aquifolium</i>	1					V
<i>Senecio erucifolius</i>	1					V

Table 18: Frequency table for W21a – W10a transition

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Quercus robur</i>	6	7	10	9	8	V
<i>Crataegus monogyna</i>	1	5	2	5	4	V
<i>Fraxinus excelsior</i>	7	7	1	-	-	III
<i>Rosa canina</i>	-	2	2	-	4	III
<i>Salix caprea</i>	2	4	-	-	-	II
<i>Sambucus nigra</i>	1	-	1	-	-	II
<i>Prunus spinosa</i>	-	-	-	-	7	I
<i>Ulmus procera</i>	7	-	-	-	-	I
<i>Acer campestre</i>	-	-	-	-	1	I
<i>Salix cinerea</i>	-	1	-	-	-	I
<i>Rubus fruticosus agg.</i>	2	6	7	5	3	V
<i>Ajuga reptans</i>	1	4	1	2	-	IV
<i>Urtica dioica</i>	1	7	-	-	1	III
<i>Kindbergia praelonga</i>	-	2	-	6	4	III
<i>Galium aparine</i>	5	5	3	-	-	III
<i>Prunus spinosa</i>	-	-	1	3	5	III
<i>Fraxinus excelsior</i>	2	4	1	-	-	III
<i>Brachythecium rutabulum</i>	3	-	-	3	3	III
<i>Myosotis arvensis</i>	-	1	1	2	-	III
<i>Arum maculatum</i>	3	2	-	-	-	II
<i>Fissidens species</i>	-	-	-	2	3	II
<i>Geum urbanum</i>	-	2	3	-	-	II
<i>Rumex sanguineus</i>	-	2	-	-	3	II
<i>Tamus communis</i>	1	-	-	-	1	II

Species	Quadrat locations					Frequency
<i>Ulmus procera</i>	3	-	-	-	-	I
<i>Ranunculus repens</i>	-	-	2	-	-	I
<i>Bellis perennis</i>	-	1	-	-	-	I
<i>Crataegus monogyna</i>	-	-	1	-	-	I
<i>Dactylis glomerata</i>	-	-	1	-	-	I
<i>Dryopteris filix-mas</i>	-	-	-	-	1	I
<i>Epilobium montanum</i>	-	-	-	-	1	I
<i>Ficaria verna</i>	1	-	-	-	-	I
<i>Hedera helix</i>	1	-	-	-	-	I
<i>Heracleum sphondylium</i>	1	-	-	-	-	I
<i>Holcus lanatus</i>	-	-	1	-	-	I
<i>Potentilla xmixta</i>	-	-	-	1	-	I
<i>Rosa species</i>	-	-	-	1	-	I
<i>Senecio jacobaea</i>	-	-	-	-	1	I
<i>Veronica hederifolia</i>	1	-	-	-	-	I
Bare ground	8	4	7	7	8	

Table 19: Frequency table for W25

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Rubus fruticosus agg.</i>	10	10	10	10	9	V
<i>Rosa canina</i>	4	2	5	-	6	IV
<i>Urtica dioica</i>	2	5	-	4	-	III
<i>Crataegus monogyna</i>	4	-	4	-	4	III
<i>Arrhenatherum elatius</i>	2	-	-	1	-	II
<i>Heracleum sphondylium</i>	1	-	-	1	-	II
<i>Quercus robur</i>	1	-	1	-	-	II
<i>Brachythecium rutabulum</i>	-	4	-	-	-	I
<i>Galium aparine</i>	-	-	-	4	-	I
<i>Epilobium hirsutum</i>	2	-	-	-	-	I
<i>Epilobium species</i>	-	-	2	-	-	I
<i>Lathyrus pratensis</i>	-	-	2	-	-	I
<i>Myosotis arvensis</i>	-	2	-	-	-	I

Species	Quadrat locations					Frequency
<i>Prunus spinosa</i>	2	-	-	-	-	I
<i>Calystegia sepium</i>	1	-	-	-	-	I
<i>Cirsium arvense</i>	-	1	-	-	-	I
<i>Clematis vitalba</i>	-	-	-	-	1	I
<i>Conium maculatum</i>	-	1	-	-	-	I
<i>Dipsacus fullonum</i>	-	-	1	-	-	I
<i>Fallopia japonica</i>	-	1	-	-	-	I
<i>Fraxinus excelsior</i>	-	1	-	-	-	I
<i>Rumex sanguineus</i>	1	-	-	-	-	I
<i>Tamus communis</i>	1	-	-	-	-	I

Table 20: Frequency table for W25

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Pteridium aquilinum</i>	9					V
<i>Urtica dioica</i>	7					V
<i>Rubus fruticosus agg.</i>	6					V
<i>Galium aparine</i>	4					V
<i>Myosotis arvensis</i>	2					V
<i>Rumex sanguineus</i>	2					V
<i>Fraxinus excelsior</i>	1					V

Table 21: Frequency table for MG1a

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Festuca rubra</i>	9	9	10	10	10	V
<i>Cirsium arvense</i>	4	-	3	3	3	IV
<i>Arrhenatherum elatius</i>	3	4	1	-	3	IV
<i>Taraxacum sect. Ruderalia</i>	1	-	1	1	3	IV
<i>Senecio erucifolius</i>	1	2	2	1	-	IV
<i>Vicia sativa</i>	1	-	2	2	2	IV
<i>Lathyrus pratensis</i>	5	4	-	3	-	III
<i>Poa pratensis</i>	-	-	2	3	2	III

Species	Quadrat locations					Frequency
<i>Myosotis arvensis</i>	2	3	-	1	-	III
<i>Rubus fruticosus</i> agg.	2	-	1	2	-	III
<i>Stellaria holostea</i>	3	2	-	-	-	II
<i>Tragopogon pratensis</i>	-	3	-	-	1	II
<i>Vicia hirsuta</i>	1	3	-	-	-	II
<i>Helminthotheca echioides</i>	-	-	-	2	1	II
<i>Hypericum perforatum</i>	-	2	-	1	-	II
<i>Quercus robur</i>	2	1	-	-	-	II
<i>Crataegus monogyna</i>	-	1	-	-	1	II
<i>Fraxinus excelsior</i>	1	1	-	-	-	II
<i>Geum urbanum</i>	-	-	1	1	-	II
<i>Medicago lupulina</i>	-	-	1	-	1	II
<i>Senecio jacobaea</i>	1	-	1	-	-	II
<i>Vicia sepium</i>	-	-	-	-	5	I
<i>Heracleum sphondylium</i>	-	3	-	-	-	I
<i>Bromus hordeaceus</i>	-	-	-	-	2	I
<i>Galium aparine</i>	2	-	-	-	-	I
<i>Trifolium medium</i>	-	-	-	-	2	I
<i>Agrostis stolonifera</i>	1	-	-	-	-	I
<i>Brachythecium rutabulum</i>	-	1	-	-	-	I
<i>Carex flacca</i>	-	-	-	1	-	I
<i>Epilobium species</i>	1	-	-	-	-	I
<i>Geranium dissectum</i>	-	-	-	-	1	I
<i>Hypochaeris radicata</i>	-	-	-	1	-	I
<i>Lathyrus nissolia</i>	-	-	1	-	-	I
<i>Leucanthemum vulgare</i>	-	-	-	1	-	I
<i>Prunus spinosa</i>	-	1	-	-	-	I
<i>Ranunculus acris</i>	-	-	-	-	1	I
<i>Tamus communis</i>	1	-	-	-	-	I
<i>Viola riviniana</i>	-	-	-	1	-	I

Table 22: Frequency table for OV24a

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Urtica dioica</i>	9	10				V
<i>Calystegia silvatica</i>	6	4				V
<i>Galium aparine</i>	3	4				V
<i>Rubus fruticosus agg.</i>	3	2				V
<i>Poa trivialis</i>	4	-				III
<i>Kindbergia praelonga</i>	-	3				III
<i>Arrhenatherum elatius</i>	2	-				III
<i>Brachythecium rutabulum</i>	-	1				III
<i>Cirsium arvense</i>	1	-				III
<i>Epilobium species</i>	-	1				III
<i>Galega officinalis</i>	1	-				III
<i>Impatiens glandulifera</i>	-	1				III
<i>Myosotis arvensis</i>	1	-				III
<i>Rumex obtusifolius</i>	1	-				III
<i>Urtica dioica</i>	9	10				V
<i>Calystegia silvatica</i>	6	4				V
<i>Galium aparine</i>	3	4				V
<i>Rubus fruticosus agg.</i>	3	2				V
<i>Poa trivialis</i>	4	-				III
<i>Kindbergia praelonga</i>	-	3				III
<i>Arrhenatherum elatius</i>	2	-				III
<i>Brachythecium rutabulum</i>	-	1				III
<i>Cirsium arvense</i>	1	-				III
<i>Epilobium species</i>	-	1				III
<i>Galega officinalis</i>	1	-				III
<i>Impatiens glandulifera</i>	-	1				III
<i>Myosotis arvensis</i>	1	-				III
<i>Rumex obtusifolius</i>	1	-				III

Table 23: Frequency table for OV27b

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Chamerion angustifolium</i>	8	10				V
<i>Urtica dioica</i>	7	4				V
<i>Rubus fruticosus</i> agg.	5	2				V
<i>Galium aparine</i>	-	4				III
<i>Cirsium arvense</i>	-	3				III
<i>Arrhenatherum elatius</i>	-	2				III
<i>Epilobium hirsutum</i>	-	1				III
<i>Quercus robur</i>	1	-				III

Table 24: Frequency table for open mosaic 1

Species	Quadrat locations					Frequency
	Q1	Q2	Q3	Q4	Q5	
<i>Didymodon species</i>	8					V
<i>Poa annua</i>	5					V
<i>Erophila verna</i>	3					V
<i>Arenaria serpyllifolia</i>	2					V
<i>Barbula convoluta</i>	2					V
Bare ground	6					

### *Lower plants within this CFA*

- 5.4.55 A blue-brick railway bridge at Breakspear Road South has a large population of ferns including several species. A similar bridge at the River Pinn also supports plants of modest botanical note (though not necessarily members of any formal category of rarity), especially a large population of a hawkweed (*Hieracium* species).

## 6 River habitat survey

### 6.1 Introduction

6.1.1 This section of the appendix presents details of River Habitat Survey<sup>18</sup> (RHS) data for the section of the Proposed Scheme that will pass through CFA1 to 6 inclusive.

### 6.2 Methodology

6.2.1 Details of the standard methodology utilised for RHS surveys are provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2).

6.2.2 There are no relevant desk study records for CFA<sub>4</sub>.

6.2.3 Desk study sources used to support the survey included the website [www.old-maps.co.uk](http://www.old-maps.co.uk).

6.2.4 A summary of locations at which RHS was undertaken within the section of the Proposed Scheme that will pass through CFA 1 to 6 inclusive is provided in Table 25.

Table 25: Summary of RHS survey locations

Ecology survey code	Watercourse	Feature type	Survey date	CFA	Approximate Distance from the Proposed Scheme (m) and orientation
010-RC1-008001	Grand Union Canal	Canal	10 June 2013 11 June 2013	4	Within the Proposed Scheme, and upstream and downstream of it.
010-RS1-023002	Ickenham Stream	Stream	14 June 2013	6	Within the Proposed Scheme, and upstream of it.
010-RC1-024001	River Pinn	Main river	13 June 2013 14 June 2013	6	Within the Proposed Scheme, and upstream and downstream of it.

### 6.3 Deviations, constraints and limitations

6.3.1 Any local methodological deviations, and the areas to which any such deviations applied are presented in Table 26.

<sup>18</sup> RHS is a system devised by the Environment Agency for assessing the character and habitat quality of rivers based on their physical structure.

Table 26: Summary of locations where requirement for RHS identified but no access available for survey

Watercourse	Location	OS grid reference - Start and finish	Feature type & comments	CFA number	Approximate Distance from the Proposed Scheme (m) and orientation
Ickenham Stream	Downstream of rail line	TQ 08031 87013 (upstream) TQ 07760 87051 (downstream)	The stream here is little more than a ditch, however this does appear to be the downstream portion of the stream which runs under the railway, as opposed to the ephemeral watercourse traversing the golf course which was originally selected for survey, but which itself drains downstream toward the rail line. Access permission was not in place to deviate from the PRoW to survey the real downstream section.  Access to the southern section was restricted by dense scrub and there was no access to a short section at the southern end where it meets High Road.	6	Within Proposed Scheme and downstream of it
Grand Union Canal	Towpath	TQ 21857 82556	The canal was only surveyed from the towpath on the left bank as no access was possible along most of the right bank.	4	Within Proposed Scheme and downstream of it

## 6.4 Baseline

### Grand Union Canal (CFA4)

#### *Predominant valley form*

6.4.1 Not applicable (canal).

#### *Number of riffles, pools and point bars*

6.4.2 Not applicable (canal).

#### *Artificial features*

6.4.3 The canal itself is an artificial water body in that it is a man-made watercourse. Two major, five intermediate, and six minor bridges are present in the canal stretch surveyed. Three minor outfalls are also present. In the western portion of the section surveyed, some coir matting appears to have been attached to the left bank. This has become partially detached and is acting as a minor deflector.

#### *Physical attributes*

6.4.4 The canal banks are reinforced. In some areas this reinforcement consists of brickwork, and in others sheet piling. In some areas the reinforcement takes the form of concrete piles held in place by a steel brace near the top of the bank. In such areas the small gaps left between the piles provide some habitat diversity akin to gaps in brickwork. The channel substrate appears to be primarily silt with a clay base. It is not known if the bed of the channel itself is reinforced as this was not visible. No flow

could be perceived on the canal at the time of survey, though at times the wind on the surface gave the impression of flow.

#### *Bank top land use and vegetation structure*

- 6.4.5 The canal tow path runs along the left bank and is used heavily by walkers and cyclists. Land use within 5m of the left bank top is urban, with some areas of improved grassland and broad leaved trees. Within 5m of the right bank top land use is also urban with some broad leaved trees. Bank faces are generally bare and bank tops either bare, uniform or simple.

#### *Channel vegetation types*

- 6.4.6 Channel vegetation was often obscured by passing narrow boats stirring up the silty substrate. Filamentous algae is the most abundant vegetation present, this being present extensively on the left bank face under the water line. It is likely to also have been present along the right bank however this bank was inaccessible during the survey. The next most abundant vegetation was submerged fine leaved algae growing in the river bed close to the banks. Emergent plants are present only rarely though terrestrial vegetation frequently trails into the water from the right hand bank which is covered in ivy at intervals.

#### *Land use within 50m of bank top*

- 6.4.7 Land use within 50m of both banktops is primarily urban with broadleaf trees lining the canal in places. Scrub/ shrubs are extensive on the right bank and patches of tall herbs and grasses occur on the left bank, set back from the canal tow path.

#### *Bank profiles*

- 6.4.8 Both banks are completely reinforced. A set-back embankment is present for some distance along the left bank, and to a much lesser extent the right.

#### *Extent of trees and associated features*

- 6.4.9 Occasional clumps of trees are present along the canal; on both banks, and these are semi-continuous for long stretches. In places the trees offer some limited shading and there are few overhanging branches.

#### *Extent of channel and bank features*

- 6.4.10 At the time of survey, no flow was perceptible on the canal. No features are present in the channel itself.

#### *Channel dimensions*

- 6.4.11 Canal width is approximately 15m, though this widens to approximately 20m in places. Water width is equal to bankfull width. Banktop height is on average 1.5m on both sides, though this increases in places, e.g. where the sides of buildings themselves are integral part of the right bank. Water depth is approximately 1.25m and bed material is unconsolidated.

#### *Features of special interest*

- 6.4.12 Some leafy debris is present in places.

*Choked channel*

- 6.4.13 The channel was not choked with vegetation at any point.

*Notable nuisance plant species*

- 6.4.14 Patches of Japanese knotweed are present along the banktops throughout the stretch surveyed.

*Overall characteristics*

- 6.4.15 An oil slick was observed in one area and occurred along a stretch of several hundred metres. This is thought likely to have been a spill from one of the many boats which are moored at intervals along the left (and much less frequently right) banks.
- 6.4.16 Some of the buildings and bridges immediately abutting the canal have small drains in the brickwork which run directly onto the canal. These presumably drain nearby hard surfaces/roofs. Some individual buildings have large numbers of these drains. 72 were counted altogether. Manholes in the towpath suggest utilities (telephone cables and electricity) pass under the canal.
- 6.4.17 The left bank in particular is obviously regularly maintained through mowing of the bank top and cutting of vegetation to allow continued access along the tow path. An attempt at enhancement has obviously been made in places, where remnants of planted coir matting can be seen attached to the banks. There is also an area of the right bank which appears damaged and has been bunded off, presumably to protect it from the wash of passing boats. Moored boats, particularly by the left bank, have algae-covered hulls, providing some habitat diversity.
- 6.4.18 Coots were observed to be nesting at intervals along the canal, having built nests incorporating urban trash. Mallard and a pair of swan were also noted to be present and a rat was observed. Three-spined stickleback and small fish fry were seen near the water surface. The canal walls are largely intact, but in a few places damage has created crevices which provide a little habitat diversity. As a whole the canal is obviously heavily silted with few refuge areas for fish or other aquatic fauna, except in patches where building trash has been dumped or a wall has collapsed in the past. At one point a large amount of trash was observed on the water surface, the source of which local workers attributed to a local recycling centre.

*Alders*

- 6.4.19 Alders where present. None were noted to be diseased.

*Ickenham Stream (CFA6)**Predominant valley form*

- 6.4.20 No valley sides are obvious.

*Number of riffles, pools and point bars*

- 6.4.21 No riffles, pools or point bars area present.

### *Artificial features*

- 6.4.22 Four culverts are present in the stretch surveyed, comprising one rail culvert, two road culverts and one footpath culvert. One minor outfall was present. The channel is obviously realigned and over-deepened.

### *Physical attributes*

- 6.4.23 The stream at this location is little more than a ditch. Where the vegetation thins to the extent that the channel can be seen, no flow was perceptible and in some places the channel was dry. Where the substrate could be observed it comprised silt, often with a covering of leaf litter. Both banks are earthen and have been re-sectioned. Neither bank has any notable features. In some places, e.g. just upstream of the railway and road culverts, the right bank has been reinforced with brickwork.

### *Bank top land use and vegetation structure*

- 6.4.24 Land use within five meters of the both banktops varies but is primarily broadleaf wood and shrub with some suburban development and parkland.

### *Channel vegetation types*

- 6.4.25 Often the channel is choked with terrestrial vegetation, including brambles and nettles, but in some places emergent reeds and broad-leaved herbs occur, as does filamentous algae in more open sections.

### *Land use within 50m of bank top*

- 6.4.26 Broadleaf wood and scrub extensively lines the channel on both sides, and immediately beyond this lies extensive suburban development. Other land uses are tall herbs and parkland.

### *Bank profiles*

- 6.4.27 Where visible, it is apparent that the banks have been re-sectioned. The right bank is reinforced in places and some embankment is obvious on the left bank. Both banks have been poached in places by walkers/dogs.

### *Extent of trees and associated features*

- 6.4.28 Broadleaf trees are semi-continuous on both banks, resulting in extensive shading of the channel with overhanging boughs and other associated features including exposed bankside roots, fallen trees and large woody debris.

### *Extent of channel and bank features*

- 6.4.29 There are extensive areas of the channel with no perceptible flow or where the channel was completely dry at the time of survey. In the one downstream area where flow was perceptible it was smooth. No in-channel features were present.

### *Channel dimensions*

- 6.4.30 Where the channel was accessible enough to be measured, banktop height was recorded as approximately 0.5 m, with a bankfull width of approximately 3.25m. Water width was 1.5m and depth 0.05m. Bed material is unconsolidated.

*Features of special interest*

- 6.4.31 Leafy debris was the only feature of special interest noted.

*Choked channel*

- 6.4.32 More than 33% of the channel was choked with terrestrial vegetation.

*Notable nuisance plant species*

- 6.4.33 No nuisance plant species were recorded.

*Overall characteristics*

- 6.4.34 Three pipe drains were observed during the course of the survey, none of which were discharging at the time. Below one of these pipes (discharging through a garden wall), fungus appeared to be growing in the stagnant water of the stream. The channel is over-deepened and silted and littering is a problem. Badger setts were noted in the wood surrounding the ditch.

*Alders*

- 6.4.35 Alders were present. None were noted to be diseased.

**River Pinn (CFA 6)***Predominant valley form*

- 6.4.36 No valley sides are obvious.

*Number of riffles, pools and point bars*

- 6.4.37 Eight riffles, twelve pools and three un-vegetated point bars were recorded. No vegetated point bars were present.

*Artificial features*

- 6.4.38 Two minor bridges and two major bridges present.

*Physical attributes*

- 6.4.39 The channel is obviously over-deepened and re-sectioned; however it appears to maintain its original course along much of the length surveyed. Some straightening is however apparent upstream of the railway line. The bank material is primarily earth, with a high clay content in places and the channel substrate is a mixture of pebbles and gravel. The predominant flow type is smooth, which is not unusual in an over-deepened channel, though there are some areas of unbroken standing wave where riffles occur.

*Bank top land use and vegetation structure at spot checks*

- 6.4.40 Land use within 5m of the left banktop is a mixture of tall herbs and broadleaf woodland. Land use on the right bank was similar although improved grassland and suburban development were also recorded within 5m. Both bank tops and bank faces have a simple vegetation structure.

### *Channel vegetation types*

- 6.4.41 Extensive filamentous algae occurs throughout the channel, with some submerged fine leaved algae (mainly *Callitriche* though some *Ranunculus* is also present, including a large patch immediately downstream of the existing rail bridge.

### *Land use within 50m of bank top*

- 6.4.42 Extensive broadleaf woodland is present in the immediate riparian zone, as is scrub and tall herbs. Beyond this the land use is primarily suburban in character, with a golf course on the left hand bank and some improved pasture on the right.

### *Bank profiles*

- 6.4.43 Both banks have been re-sectioned, though this is not recent, and mature trees are present within the banks themselves in many areas. Around and upstream of the rail bridge there have been some reinforcement works, particularly where the major bridges occur. An artificial berm appears to have been constructed in front of the reinforced brick facing just downstream of the rail bridge. Natural berms also have established in some areas. Some areas of bank have been poached in places by human activity and where dogs enter the river to swim. In the upstream stretch, some mesh reinforcement is now degraded in places.

### *Extent of trees and associated features*

- 6.4.44 Broadleaf trees are present as a more or less continuous strip along either side of the watercourse, resulting in extensive shading of the channel. Overhanging boughs, fallen trees and large woody debris are present, with extensive exposed bankside and underwater tree roots providing habitat diversity both on the bankside and within the channel itself.

### *Extent of channel and bank features*

- 6.4.45 Smooth flow is by far the predominant flow type, given past over-deepening, though the channel is recovering and there are small riffle areas of unbroken standing wave. Marginal deadwaters occur, particularly where the flow has been deflected by fallen trees and trash. Some bank faces are eroding cliffs, though most are stable due to the presence of mature vegetation. A few vegetated and non-vegetated side bars and mid channel bars are present, in addition to some discrete gravel deposits.

### *Channel dimensions*

- 6.4.46 Banktop height is approximately 1.5m, though the left bank seems slightly embanked at the upstream end. Bankfull width of is approximately 6m and water width is approximately 4m. The trashline appears to be lower than the banktop, at a height of approximately 1m. Water depth is approximately 0.25m and bed material is gravel or silt in the middle of channel with occasional gravel bars.

### *Features of special interest*

- 6.4.47 Features of special interest include two debris dams, leafy debris, a marshy area on the right hand bank between the rail bridge and upstream footbridge and a moat at the downstream end of the reach, which is connected to the river but was dry at the time of survey. The bed of the moat was covered in dead leaves with one or two emergent monocots in damper areas.

*Choked channel*

- 6.4.48 The channel was not choked with vegetation at any point.

*Notable nuisance plant species*

- 6.4.49 Himalayan balsam and giant hogweed have invaded extensive areas of the river, being present on both banks and also on mid-channel and side bars.

*Overall characteristics*

- 6.4.50 Existing impacts on the river include tipping, particularly over garden fences where they abut the right hand bank. Some pollution is evident as an oily film was released in areas where silt accumulations were disturbed. Signal crayfish were observed in the channel, as were their burrows in areas where the banks were predominantly clay at the base. A kingfisher was observed in the downstream reach, and some kingfisher burrows were present. Locals say they have seen heron and egret on the river. At the upstream end of the site, next to the golf course, a ditch has been dug parallel to the left bank. This was dry at the time of survey but it is assumed it was installed for flood defence purposes to protect the golf course.

*Alders*

- 6.4.51 Alders were present in the riparian area. None were noted to be diseased.

## 7 River corridor survey

### 7.1 Introduction

- 7.1.1 This section of the appendix presents details of the river corridor survey<sup>19</sup> (RCS) data for the section of the Proposed Scheme that will pass through Community Forum Area (CFA) 1 to 6 inclusive.

### 7.2 Methodology

- 7.2.1 Details of the standard methodology utilised for RCS surveys are provided in the Technical Note HS2 Ecological Surveys: Field Survey Methods and Standards which is included as an appendix to Volume 1.
- 7.2.2 A summary of locations at which RCS was undertaken within the sections of the Proposed Scheme that will pass through CFA1 to6 inclusive is provided in Table 27.

Table 27: Summary of RCS survey locations

Ecology survey code	Watercourse Name	Feature type	Survey date(s)	CFA number	Approximate Distance from the Proposed Scheme (m) and orientation
010-RC1-008002	Grand Union Canal	Canal	10-11/06/13	CFA4	Within the Proposed Scheme, and upstream and downstream of it.
010-RC1-023002	Ickenham Stream	Stream	13-14/06/13	CFA6	Within the Proposed Scheme, and upstream of it.
010-RC1-024002	River Pinn	Main River	26/06/13	CFA6	Within the Proposed Scheme, and upstream and downstream of it.

### 7.3 Deviations, constraints and limitations

- 7.3.1 Constraints and limitations to surveys are provided in Table 28.

Table 28: Summary of locations where requirement for RCS identified but no access available for survey

Survey site name	Location	OS grid reference start and finish	Description of proposed survey location	CFA number	Approximate Distance from Proposed Scheme
Ickenham Stream	Golf course and dense scrub	TQ 080 870 (upstream), TQ 077 870 (downstream)	No access to the stream where it flows alongside the golf course. For more information please refer to Table 2 of the River Habitat Survey Technical Appendix.  Access to the southern section was restricted by dense scrub  No access to a short section at the southern end where it meets High Road	6	Within the Proposed Scheme

<sup>19</sup> River corridor survey is a method used to provide basic ecological information about a stretch of river and its accompanying bank. It involves the production of standardised maps of vegetation structure and channel morphology for 500m sections of river.

Survey site name	Location	OS grid reference start and finish	Description of proposed survey location	CFA number	Approximate Distance from Proposed Scheme
Grand Union Canal	Towpath	TQ 218 825	The canal was only surveyed from the towpath on the left bank as no access was possible along most of the right bank.	4	Within the Proposed Scheme

## 7.4 Baseline

### Grand Union Canal (CFA 4)

- 7.4.1 River corridor habitats identified in CFA<sub>4</sub> along the Grand Union Canal are detailed in
- 7.4.2 Table 29 and in Figure 1 to Figure 10.

Table 29: RCS results for Grand Union Canal CFA2-5

Ecology survey code	RS1		
Name of watercourse	Grand Union Canal		
Surveyor(s)	DGW	Date	10 June 2013 - 11 June 2013
Survey start (24hr clock)	08.30	Survey Finish (24 hr clock)	16.00
Weather conditions (description)	Cloudy		
OS Grid Ref (8 digit)	Start Section	TQ 2062 8319	
	End Section	TQ 2328 8236	
Photo Ref(s)	N/A		
Average width (m)	15		
Average depth (m)	1.25		
Brief description of channel	Straight, artificial channel with less than one per cent cover of visible aquatic, emergent or water-margin vegetation comprising two small patches of floating algae and small amounts of Elodea. The water is very turbid, particularly when passing boat traffic stirs up the fine silt/clay substrate.		
Base substrate	Clay/silt , with artificial cobbles in small sections		
Bank type (include height, angle and extent of erosion)	Left Bank (LB)	Extensive brickwork, occasional vertical steel and concrete pilings	
	Right Bank (RB)	Vertical steel and concrete pilings	
Notable channel features	LB	Filamentous algae present extensively on the left bank face under the water line	
	RB	Right bank face under the water line was too distant to be visible though terrestrial vegetation trails into the river from the right bank along much of its length	
Marginal vegetation (Description)	LB	Very small amounts of <i>Iris pseudacorus</i> (Yellow Iris)	
	RB	Very small amounts of <i>Iris pseudacorus</i> (Yellow Iris)	
Bank zone habitats (Description)	LB	Tow path with uniform mowed grass running along the top of the reinforced bank	
	RB	Trees and scrub frequently present above the reinforced bank	
Adjacent land use	LB	Towpath to south, beyond which is industrial land	
	RB	Commercial / industrial land use right up to the top of the bank, though scrub/shrubs and trees often line the immediate bank top area	
Fauna of interest (State LB or RB if specific to single bank)	Small fish in channel, moorhen, coot, grey heron, mute swan		
Recreation features	Towpath parallel to left bank, and moorings mainly on the left bank, but occasionally on the right. Moored boats are mainly narrow boats and the moorings themselves are often temporary metal pegs hammered into the bankside earth, though wharves are present in places		
Existing management	Channel presumably dredged periodically, bank vegetation cut regularly. An attempt at enhancement has obviously been made in places in the past, where remnants of planted coir matting can be seen		

	attached to the banks
<b>Observed or potential threats to conservation value (e.g. crop spraying, scrub invasion etc)</b>	Fuel spillage from vessels (on one day of survey an oil slick was observed on the canal surface. Also the abundance of litter poses a threat to water fowl
<b>Suggestions for habitat improvement</b>	Removal of litter, increase nesting opportunities for water fowl

Figure 1: Grand Union Canal (page 1)

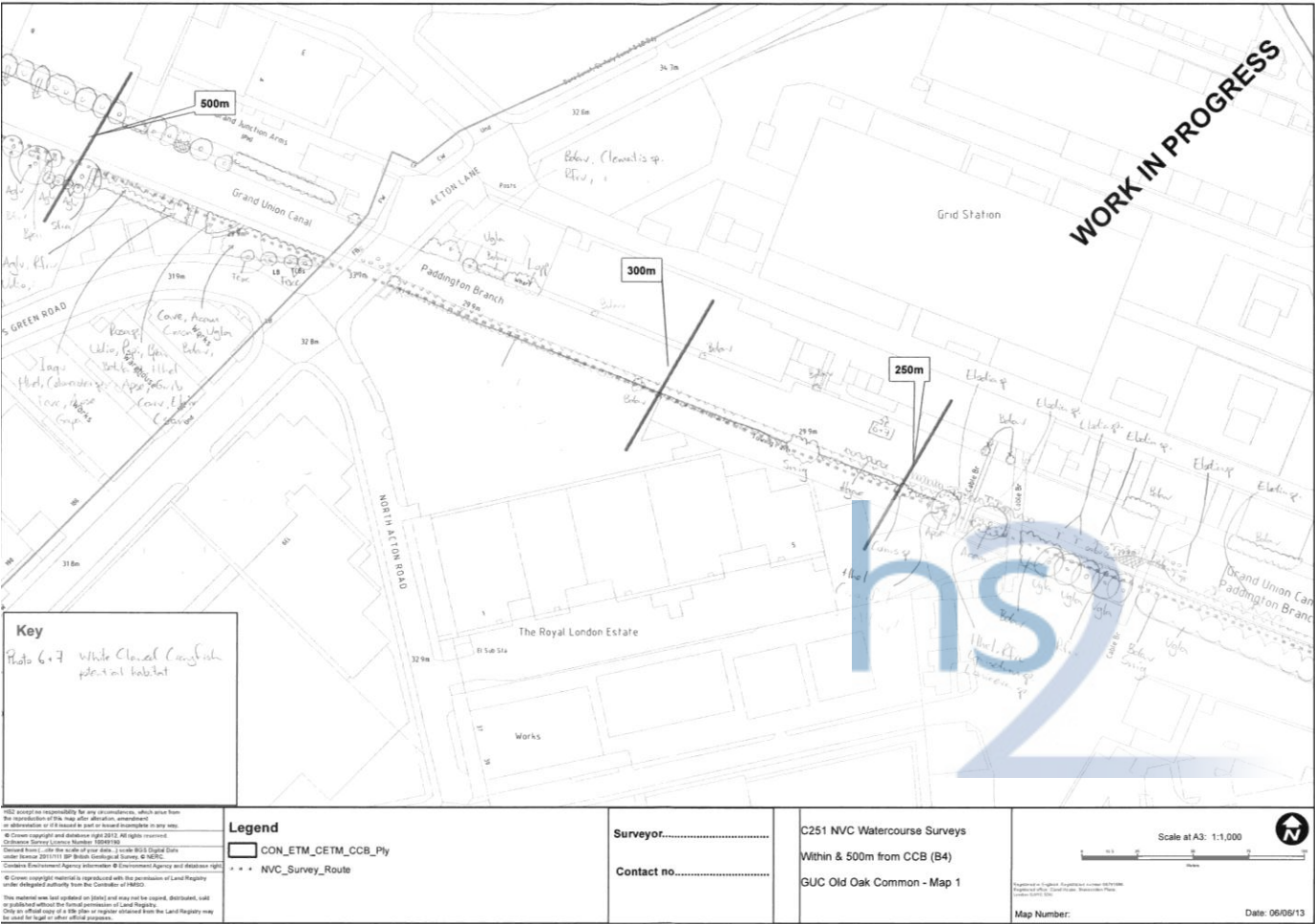


Figure 2: Grand Union Canal (page 2)

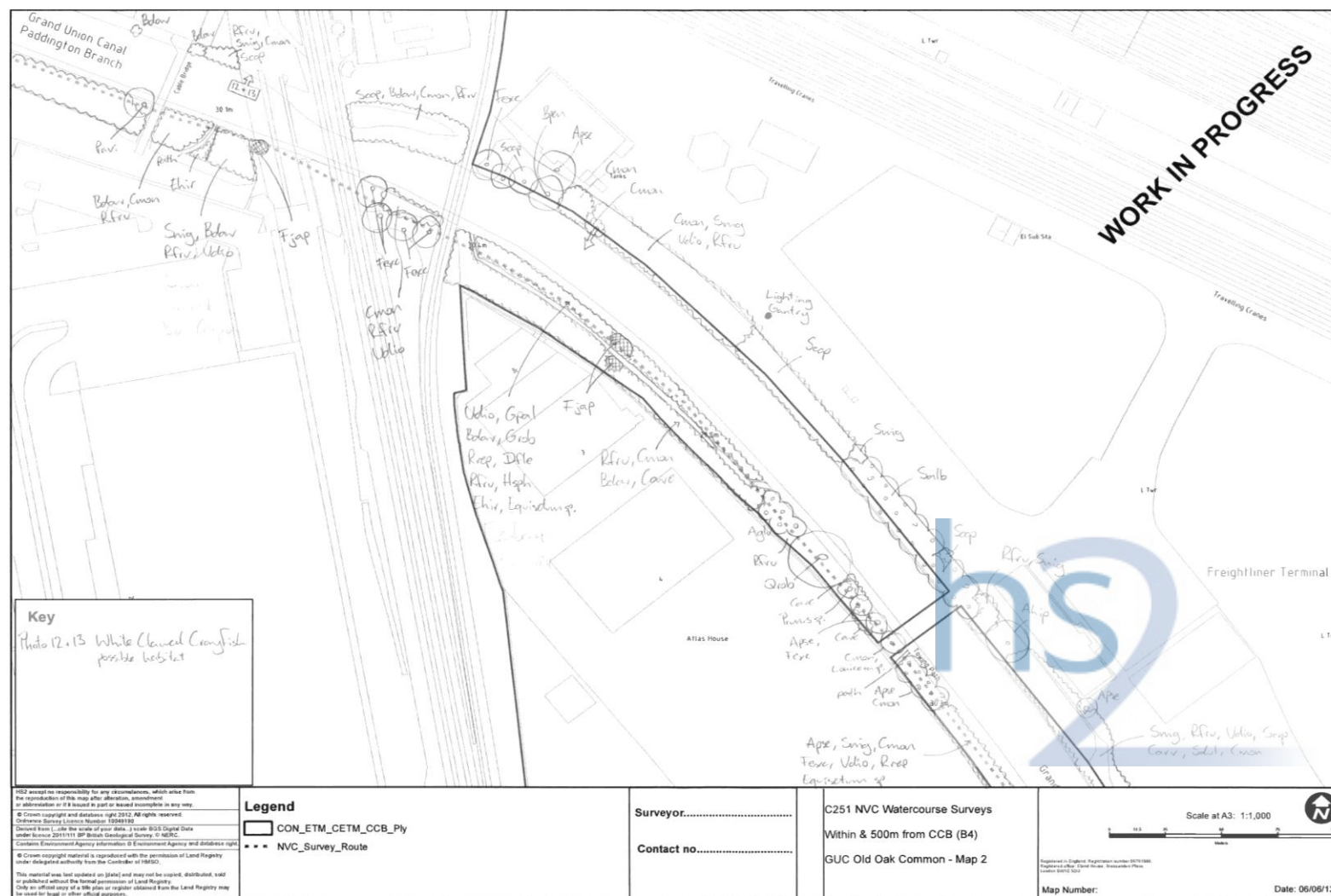
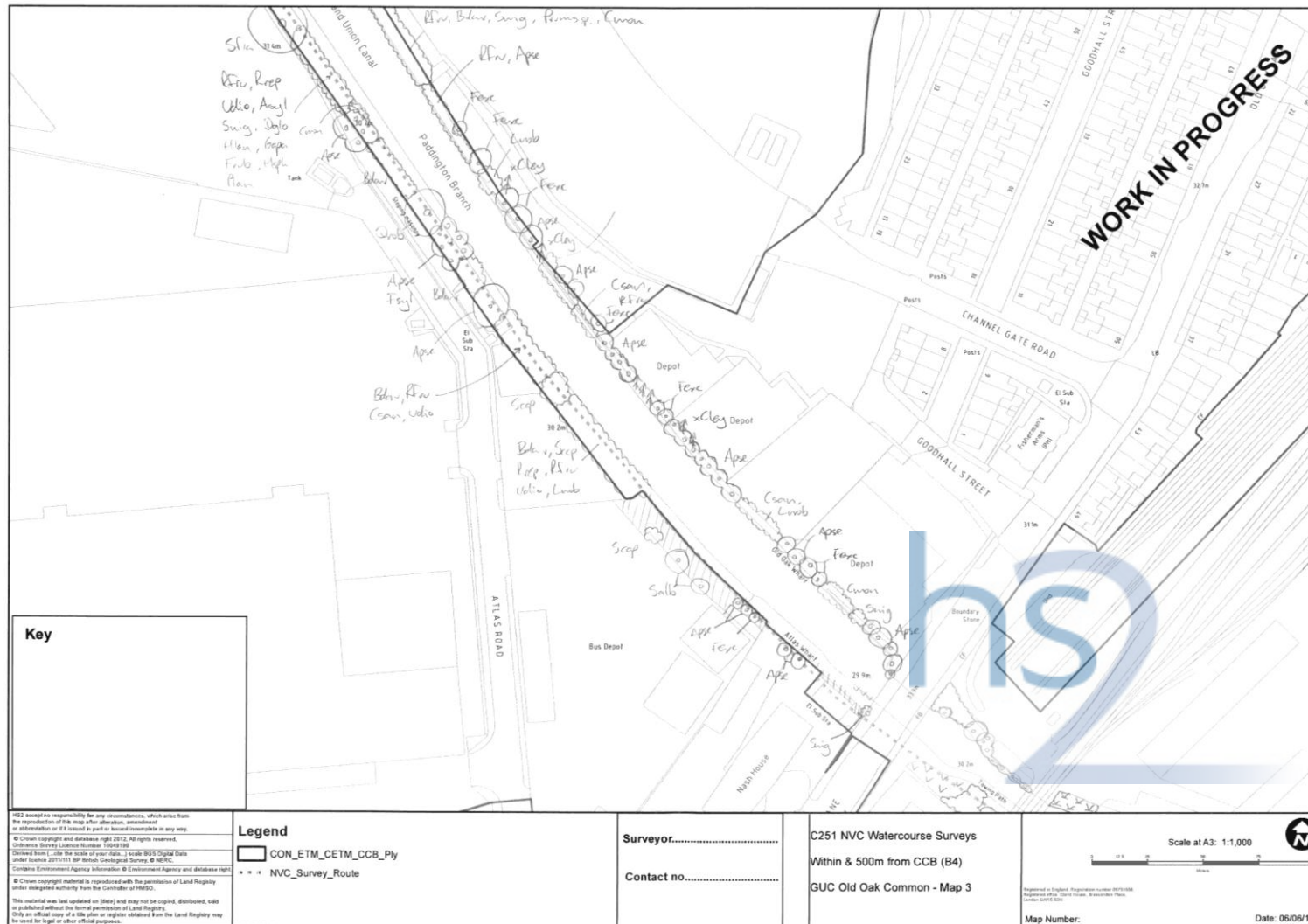


Figure 3: Grand Union Canal (page 3)



**Key**  
Photo 26 Japanese Knotweed

**Legend**  
CON\_ETM\_CETM\_CCB\_Ply  
NVC\_Survey\_Route

**Surveyor**.....  
**Contact no**.....

**C251 NVC Watercourse Surveys**  
Within & 500m from CCB (B4)  
GUC Old Oak Common - Map 4

**Scale at A3: 1:1,000**  
10.0 20.0 30.0 40.0 50.0 60.0 70.0 80.0 90.0 100.0  
meters

**Map Number:**  
**Date:** 06/06/2016

Figure 5: Grand Union Canal (page 5)

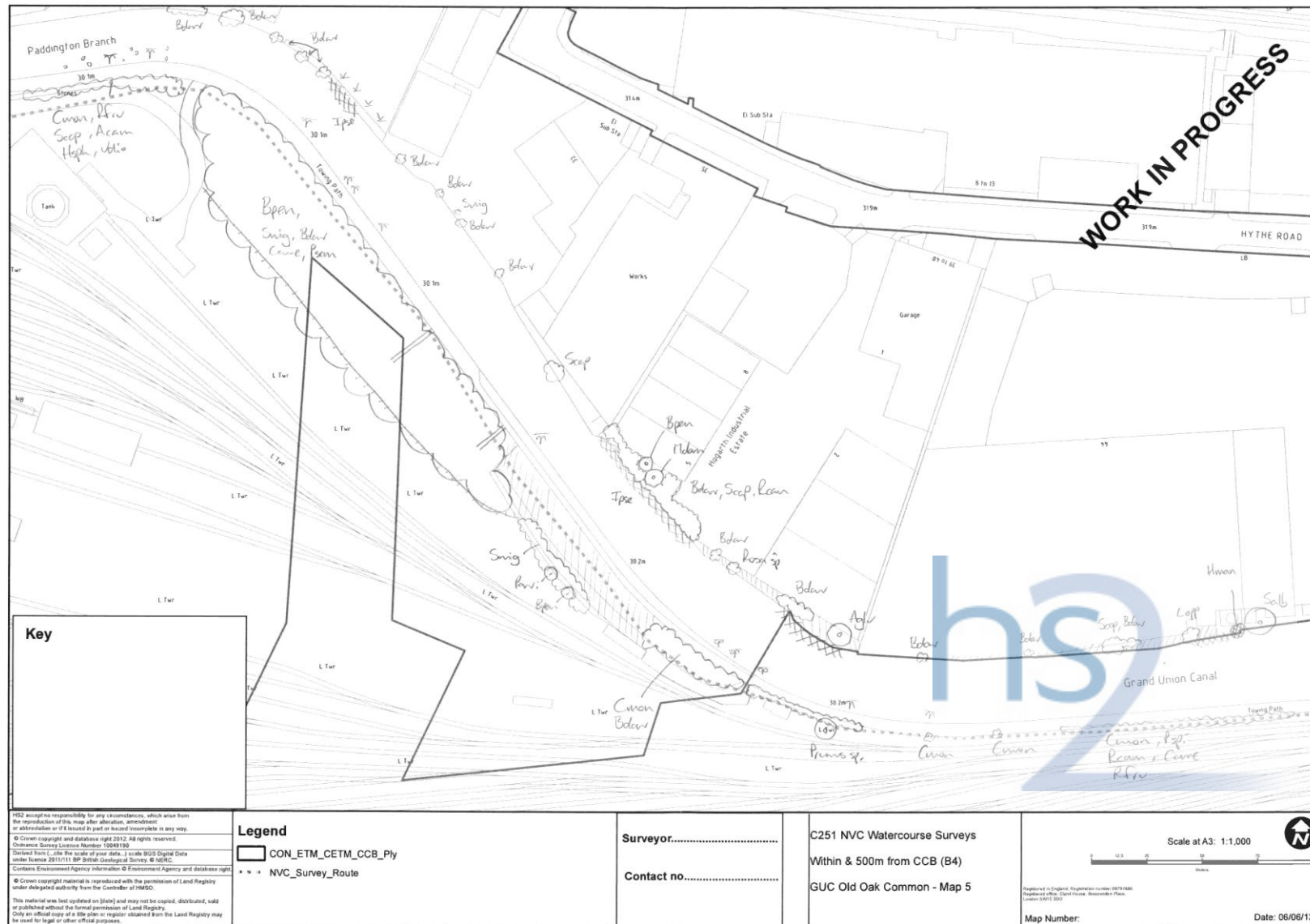


Figure 6: Grand Union Canal (page 6)

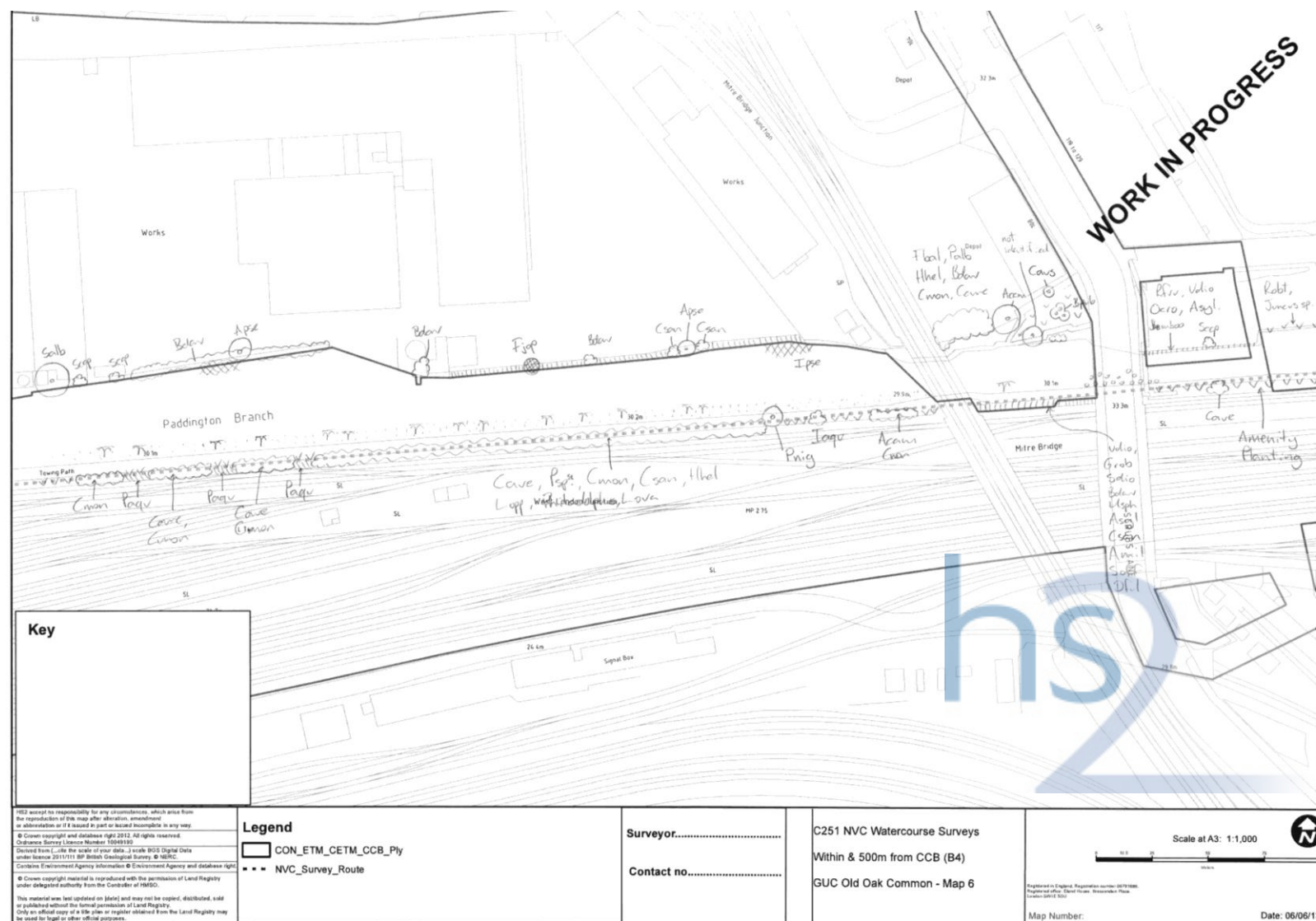




Figure 8: Grand Union Canal (page 8)

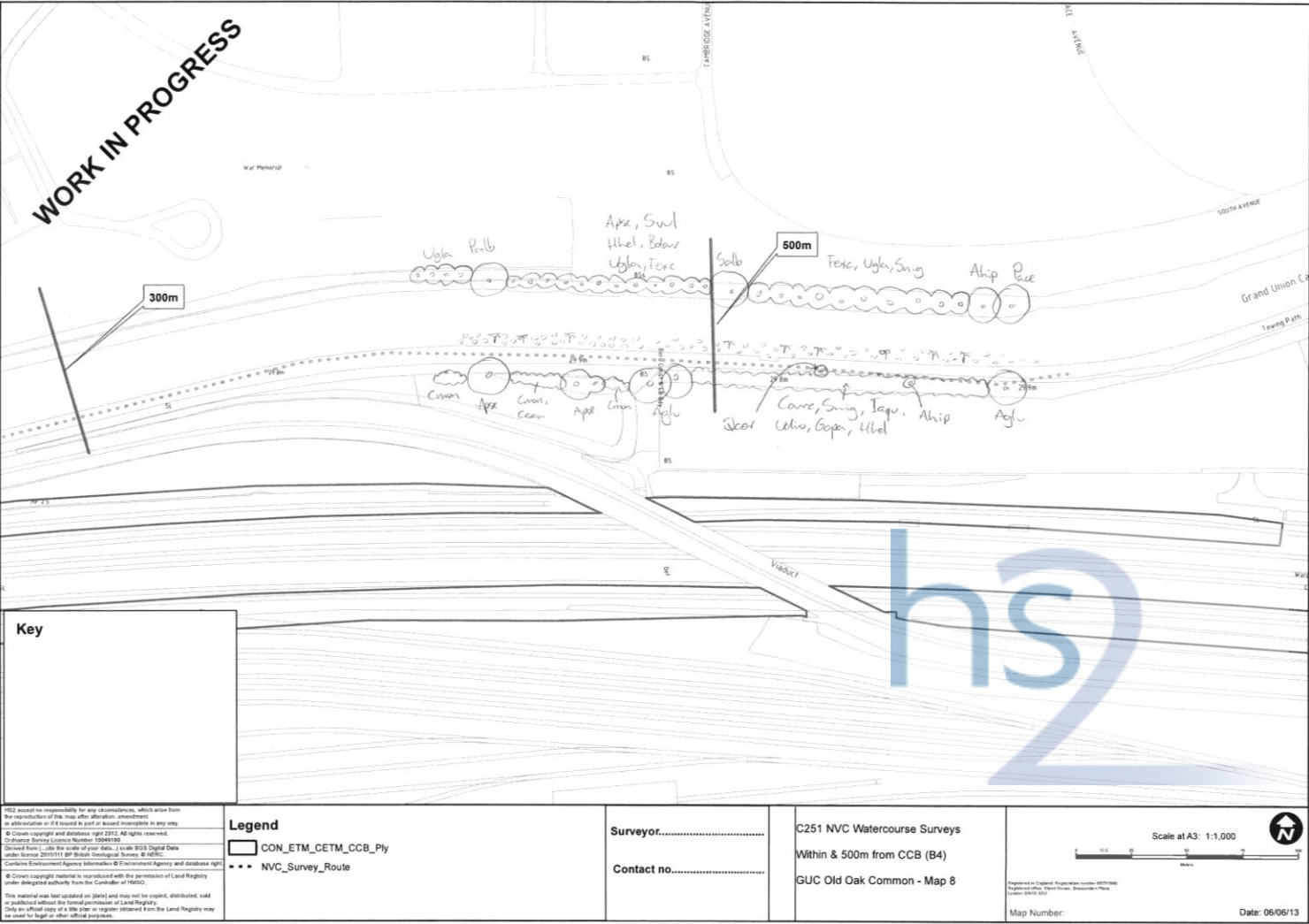


Figure 9: Grand Union Canal (page 9)

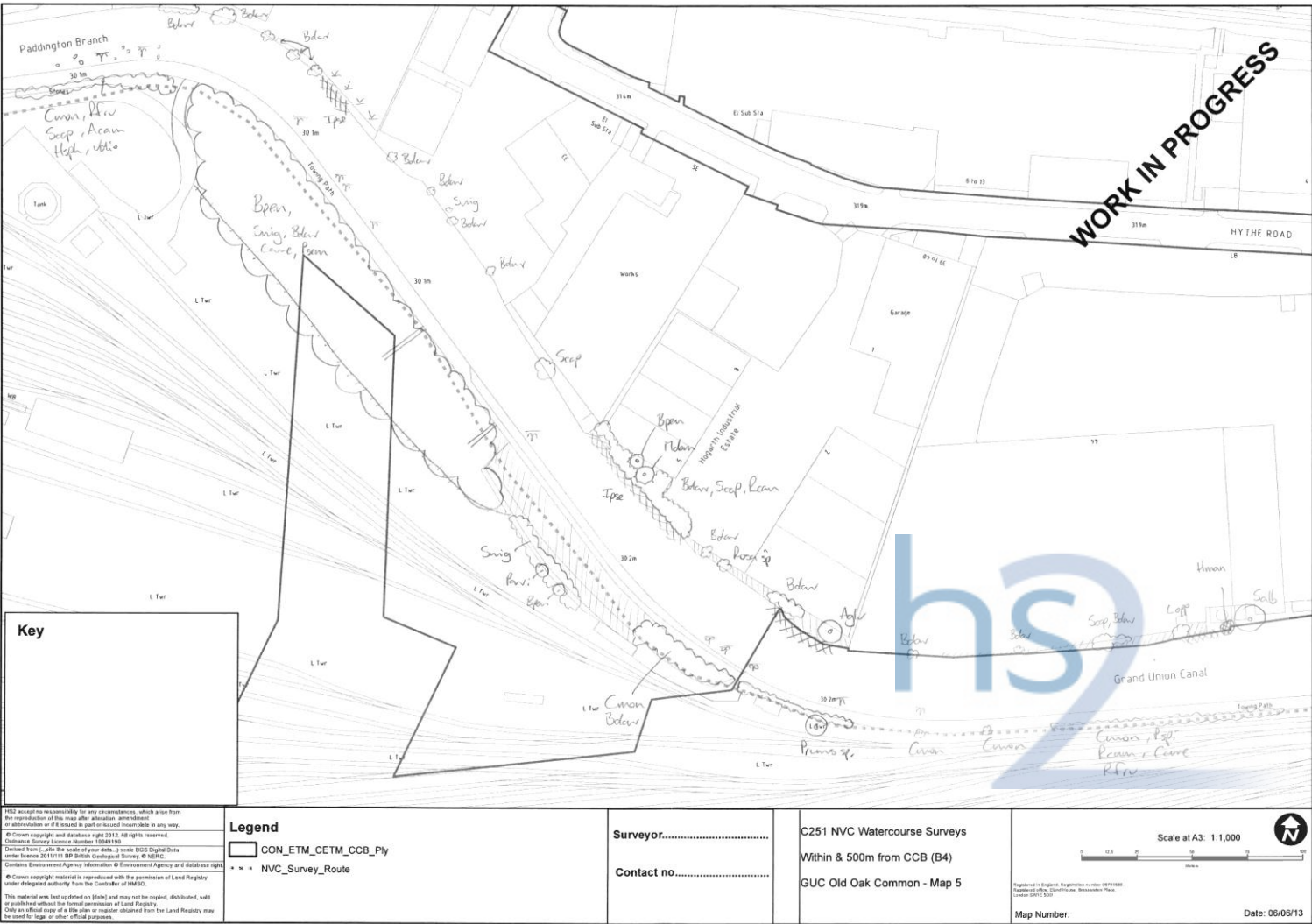
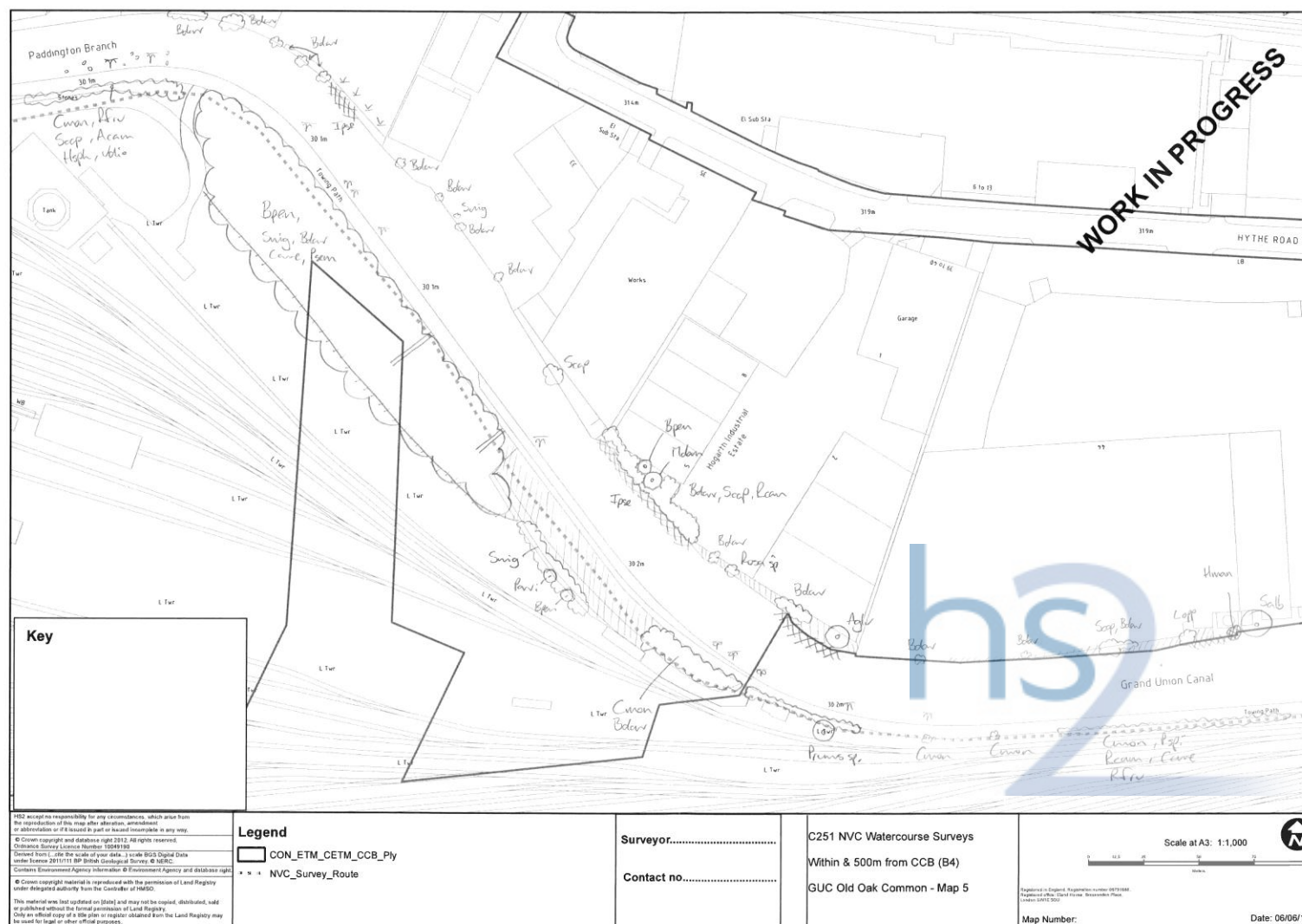


Figure 10: Grand Union Canal (page 10)



### **Ickenham Stream (CFA6)**

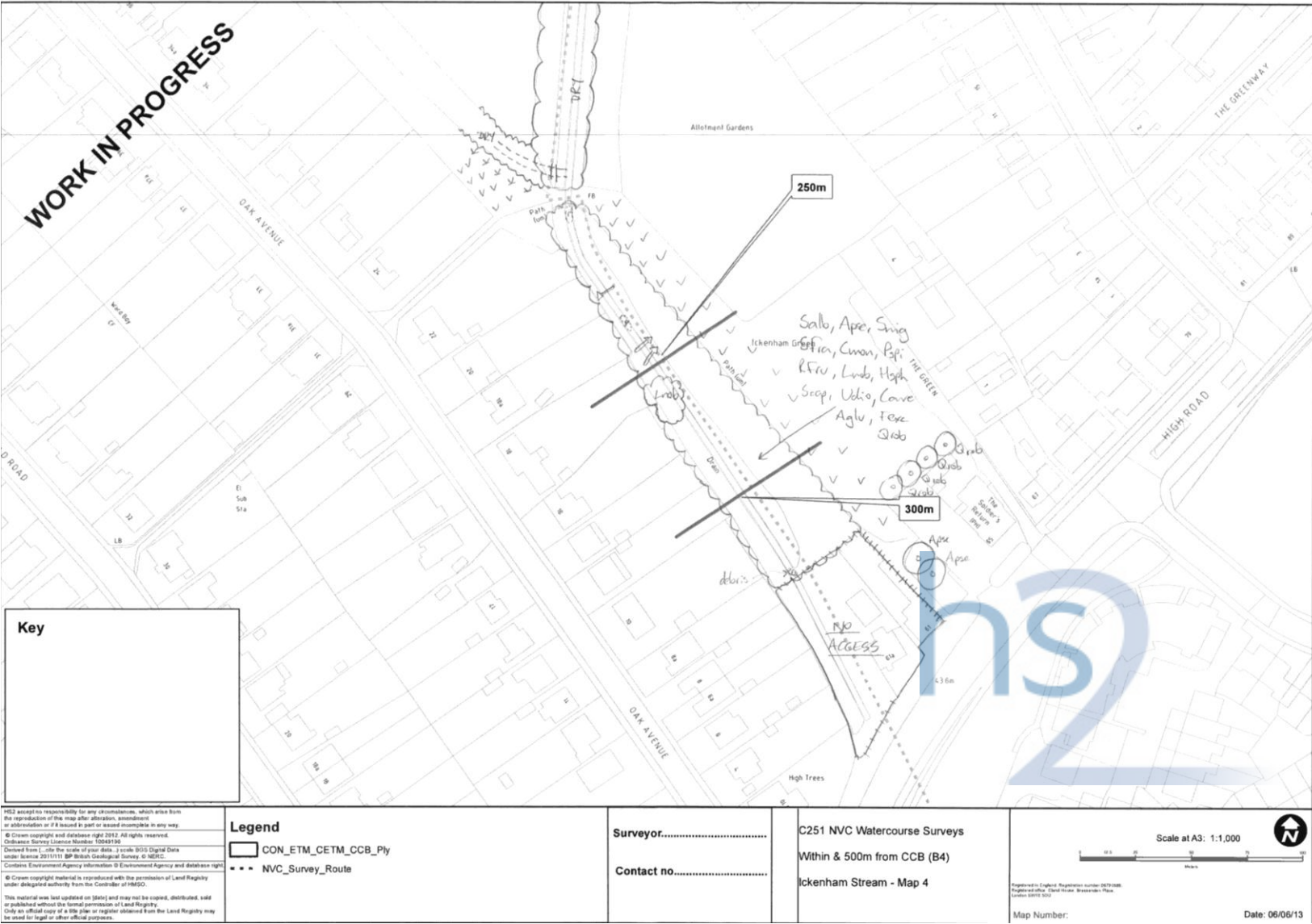
- 7.4.3 River corridor habitats identified in CFA6 along Ickenham Stream are detailed in Table 30 and in Figure 11 to Figure 13.

Table 30: RCS results for Ickenham Stream CFA6

Ecology survey code	RS1		
Name of watercourse	Ickenham Stream		
Surveyor(s)	DGW	Date	13 June 2013 - 14 June 2013
Survey start (24hr clock)	8.30	Survey Finish (24 hr clock)	16.00
Weather conditions (description)	Hot, dry and sunny		
OS Grid Ref (8 digit)	Start Section	TQ0803 8701	
	End Section	TQ 0808 8665	
Photo Ref(s)	N/A		
Average width (m)	1.5		
Average depth (m)	0.05		
Brief description of channel	Mostly dry channel with short sections with shallow water. Often choked with terrestrial vegetation.		
Base substrate	Silt		
Bank type (include height, angle and extent of erosion)	Left Bank (LB)	Varies widely along the length: the northern section has a grass bank, it is channelized under the railway, there is a 1m high earth bank through the woodland	
	Right Bank (RB)	Varies widely along the length: the northern section has a grass bank, it is channelized under the railway, there is a 1m high earth bank through the woodland	
Notable channel features	LB	South of the road bridge, at the eastern side of the fork - there is a vertical bank with a small pool by a drain outflow	
	RB	South of the road bridge, at the eastern side of the fork - there is a vertical bank with a small pool by a drain outflow	
Marginal vegetation (Description)	LB	Some emergent broad leaved herbs and reeds, however because of the dense shade from adjacent scrub and the limited amounts of water, aquatic or water-margin vegetation was often not visible	
	RB	Some emergent broad leaved herbs and reeds, however because of the dense shade from adjacent scrub and the limited amounts of water, aquatic or water-margin vegetation was often not visible	
Bank zone habitats (Description)	LB	The banks are dominated by scrub along much of the length, along with short open sections where tall ruderals are dominant. Shrub species include <i>Alnus glutinosa</i> (Alder), <i>Corylus avellana</i> (Hazel), <i>Laurus nobilis</i> (Bay) and <i>Salix caprea</i> (Goat Willow).	
	RB	The banks are dominated by scrub along much of the length, along with short open sections where tall ruderals are dominant. Shrub species include <i>Alnus glutinosa</i> (Alder), <i>Corylus avellana</i> (Hazel), <i>Laurus nobilis</i> (Bay) and <i>Salix caprea</i> (Goat Willow).	
Adjacent land use	LB	From the north the stream runs alongside a golf course, passes under a railway line and into a residential area. Residential gardens flank the southern part of the left bank	
	RB	From the north the stream runs through a golf course, passes under a railway line and into a residential area. An allotment flanks the southern part of the right bank	
Fauna of interest (State LB or RB if specific to	No riparian fauna of interest, though some badger setts were noted in the adjacent wood.		

<b>single bank)</b>	
<b>Recreation features</b>	Footpath beside stream along some of its length.
<b>Existing management</b>	No existing management is apparent
<b>Observed or potential threats to conservation value (e.g. crop spraying, scrub invasion etc)</b>	Littering and siltation appear to be a problem and there is s potential for nutrient input via drainage pipes.
<b>Suggestions for habitat improvement</b>	Vegetation clearance would reduce the dense shading south of railway and encourage aquatic or water-margin vegetation. Litter clearance would also improve the habitat.

Figure 11: Ickenham Stream (page 1)









### **River Pinn (CFA6)**

7.4.4 River corridor habitats identified in CFA6 along the River Pinn are detailed in Table 31 and in Figure 14 to Figure 19.

# Appendix EC-001-001

Table 31: RCS results for River Pinn CFA6

Ecology survey code	010-RCS1-CCB(B4)-001		
Name of watercourse	River Pinn		
Surveyor(s)	DGW	Date	26 June 2013
Survey start (24hr clock)	10:00	Survey Finish (24 hr clock)	16:00
Weather conditions (description)	Clear, calm, hot		
OS Grid Ref (8 digit)	Start Section	TQ 0726 86778	
	End Section	TQ 0780 8746	
Photo Ref(s)	N/A		
Average width (m)	4		
Average depth (m)	0.25		
Brief description of channel	Steep sided banks with abundant ruderal vegetation. Occasional clay lens at base of bank. Gravel or silt bed in middle of channel with occasional gravel bars.		
Base substrate	Predominantly pebble/gravel		
Bank type (include height, angle and extent of erosion)	Left Bank (LB)	Earth/clay, 1.5m, some eroded cliffs and gravel/sand bars	
	Right Bank (RB)	Earth/clay, 1.5m, some eroded cliffs and gravel/sand bars	
Notable channel features	LB	Predominantly glide, though some riffle and run habitat is present; gravel bars and islands; debris at fallen trees, some boulders.	
	RB	Predominantly glide, though some riffle and run habitat is present; gravel bars and islands; debris at fallen trees, some boulders.	

<b>Marginal vegetation (Description)</b>	<b>LB</b>	Abundant ruderals including <i>Impatiens glandulifera</i> (Indian Balsam) and <i>Heracleum manegazzianum</i> (Giant Hogweed).
	<b>RB</b>	Abundant ruderals including <i>Impatiens glandulifera</i> (Indian Balsam) and <i>Heracleum trachyloma</i> (Giant Hogweed).
<b>Bank zone habitats (Description)</b>	<b>LB</b>	Abundant ruderals including <i>Impatiens glandulifera</i> (Indian Balsam) and <i>Heracleum trachyloma</i> (Giant Hogweed). Mature trees and scrub line the channel along much of its length, including <i>Alnus glutinosa</i> (Alder).
	<b>RB</b>	Abundant ruderals including <i>Impatiens glandulifera</i> (Indian Balsam) and <i>Heracleum trachyloma</i> (Giant Hogweed). Mature trees and scrub line the channel along much of its length, including <i>Alnus glutinosa</i> (Alder).
<b>Adjacent land use</b>	<b>LB</b>	Arable to the north of the rail bridge. Residential to the south of the rail bridge.
	<b>RB</b>	Golf course the north of the rail bridge. Residential to the south of the rail bridge.

<b>Fauna of interest (State LB or RB if specific to single bank)</b>	Signal crayfish and minnow and kingfisher present on the river
<b>Recreation features</b>	The 'Celandine Route' footpath follows the River Pinn and is much used by dog walkers. Poached areas were observed where dogs enter and exit the river. A historic feature, Pynchester Moat, is located at the downstream end of the site on the left bank and is linked to the channel, though was dry at the time of survey. Upstream of the rail bridge, a golf course runs alongside the river.
<b>Existing management</b>	Evidence of historic channel re-profiling but no evidence of recent management.
<b>Observed or potential threats to conservation value (e.g. crop spraying, scrub invasion etc)</b>	The non-native, invasive plants <i>Impatiens glandulifera</i> (Indian Balsam) and <i>Heracleum trachyloma</i> (Giant Hogweed) are abundant along both banks.  Potential pollution from adjacent golf course and farm, and pollution and disturbance from dogs.
<b>Suggestions for habitat improvement</b>	Control of invasive weeds; clearance of rubbish including debris dam.





Figure 16: River Pinn (page 3)

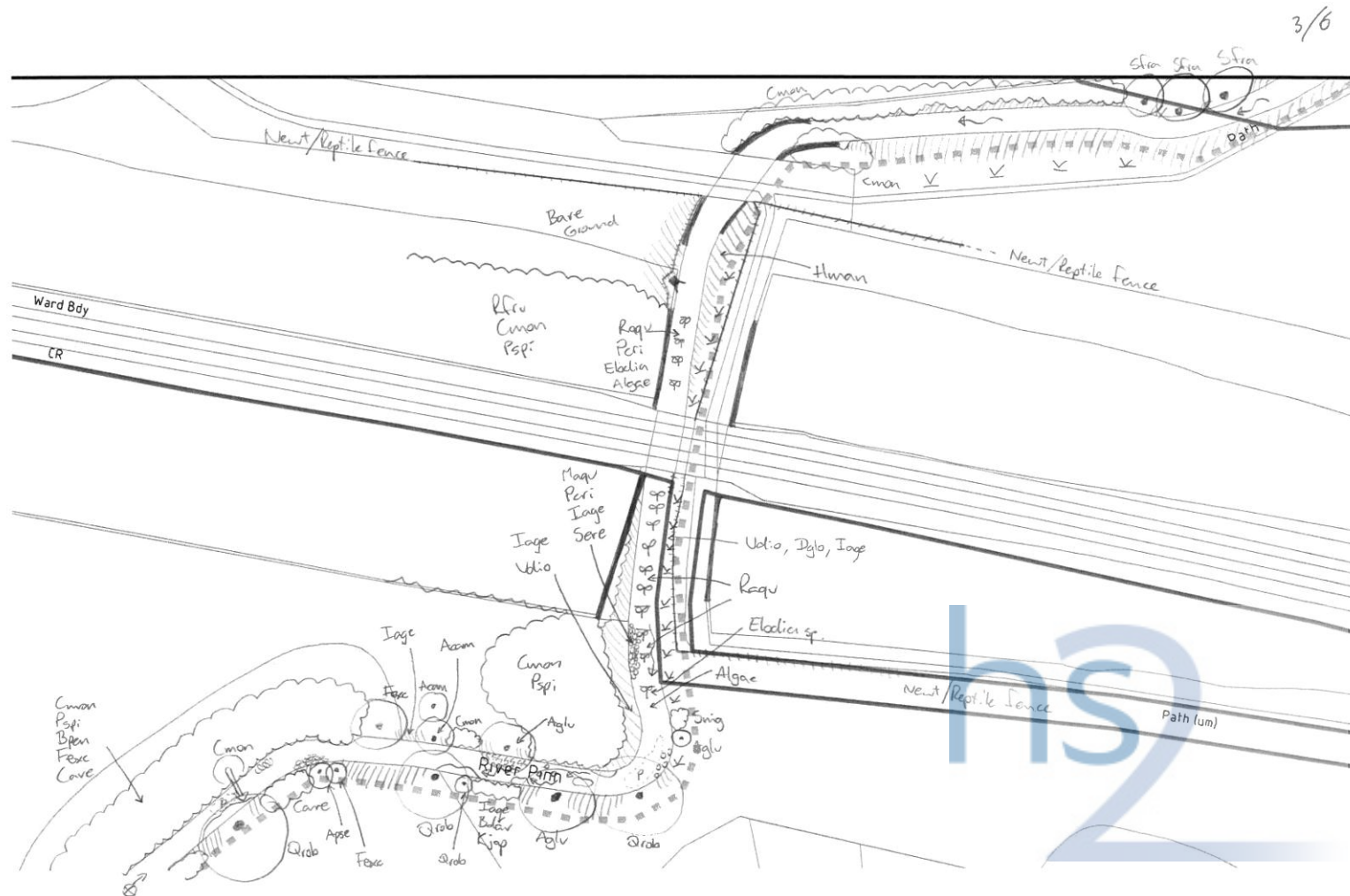


Figure 17: River Pinn (page 4)

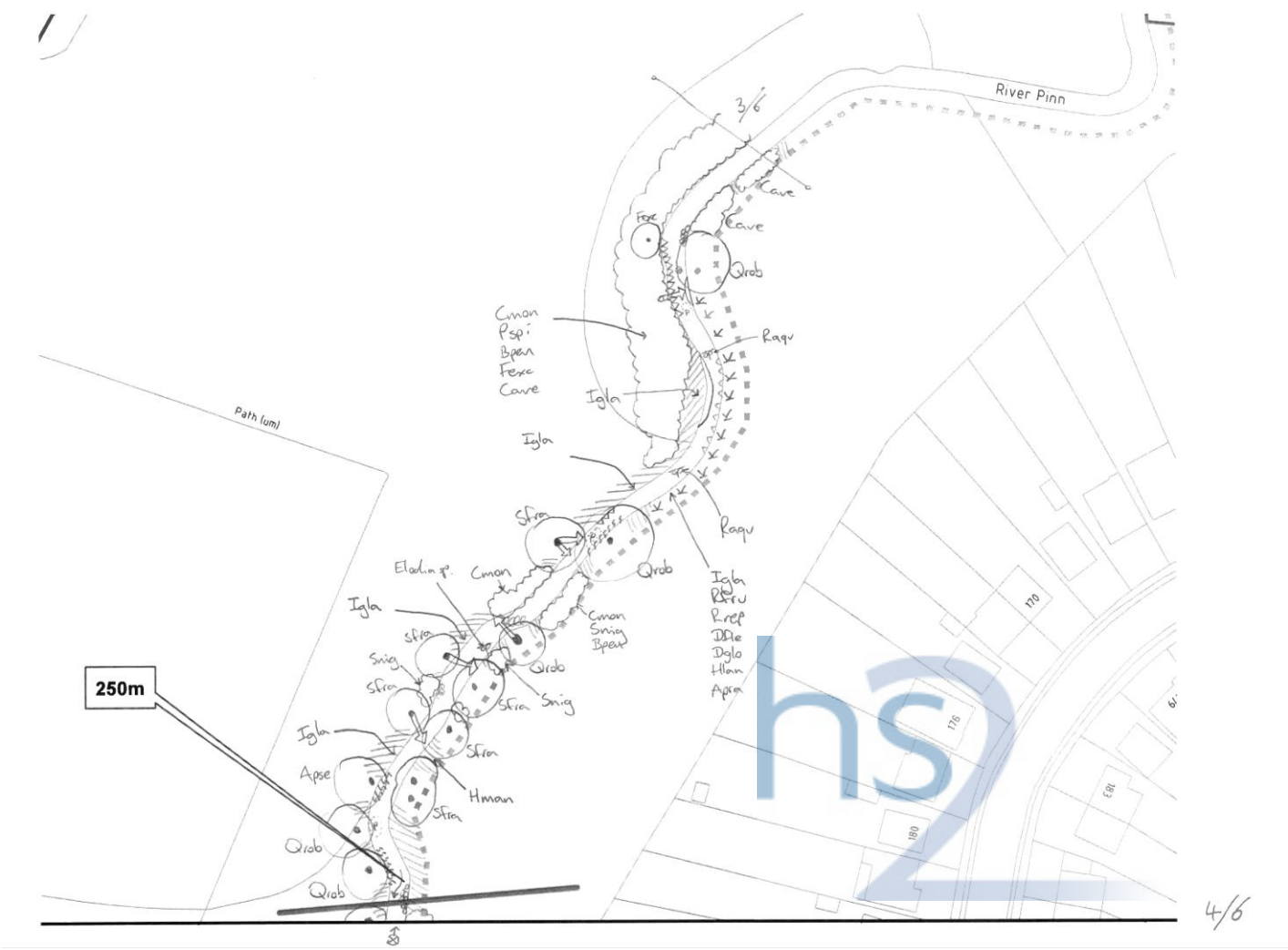


Figure 18: River Pinn (page 5)

5/6

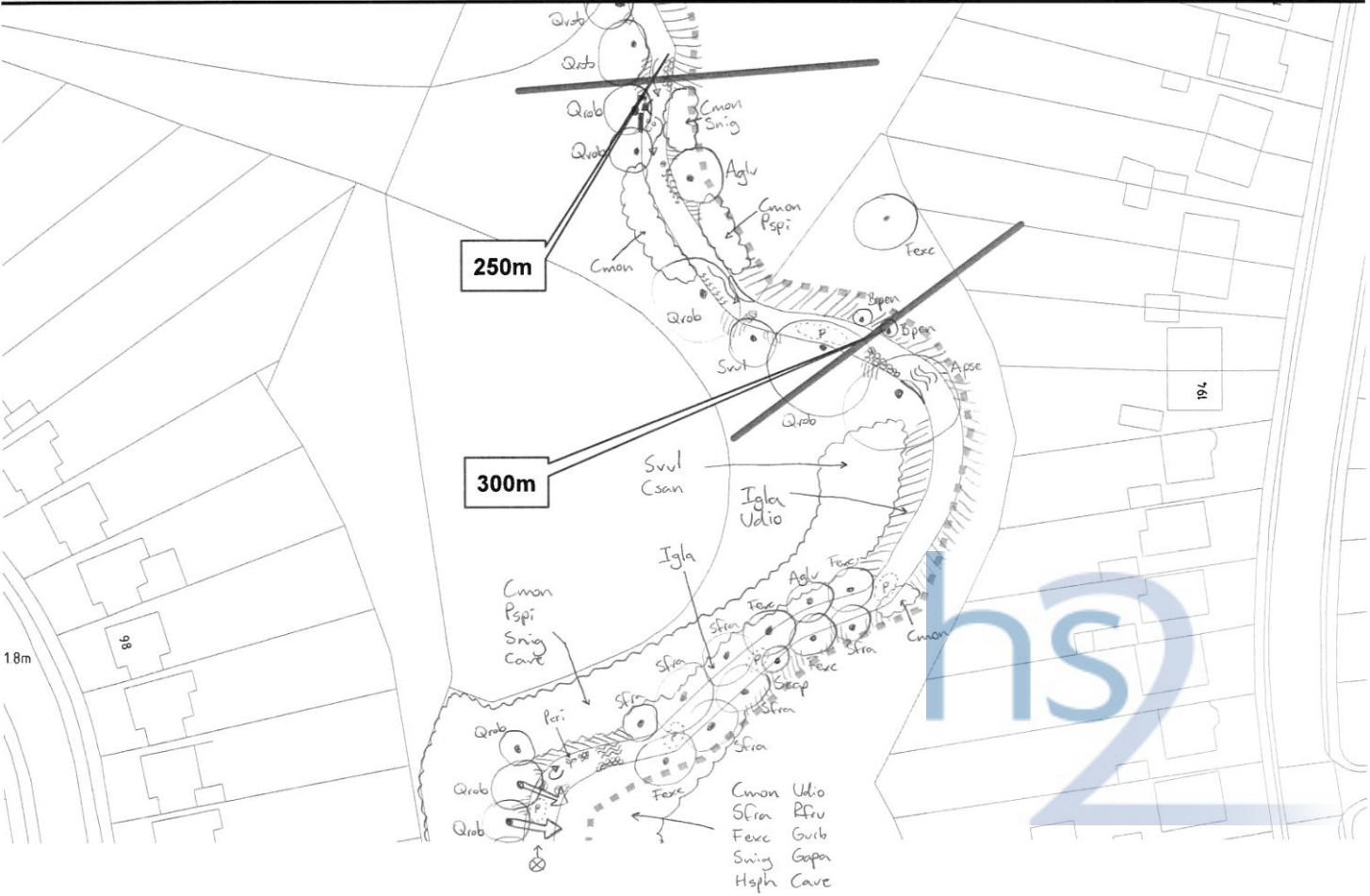
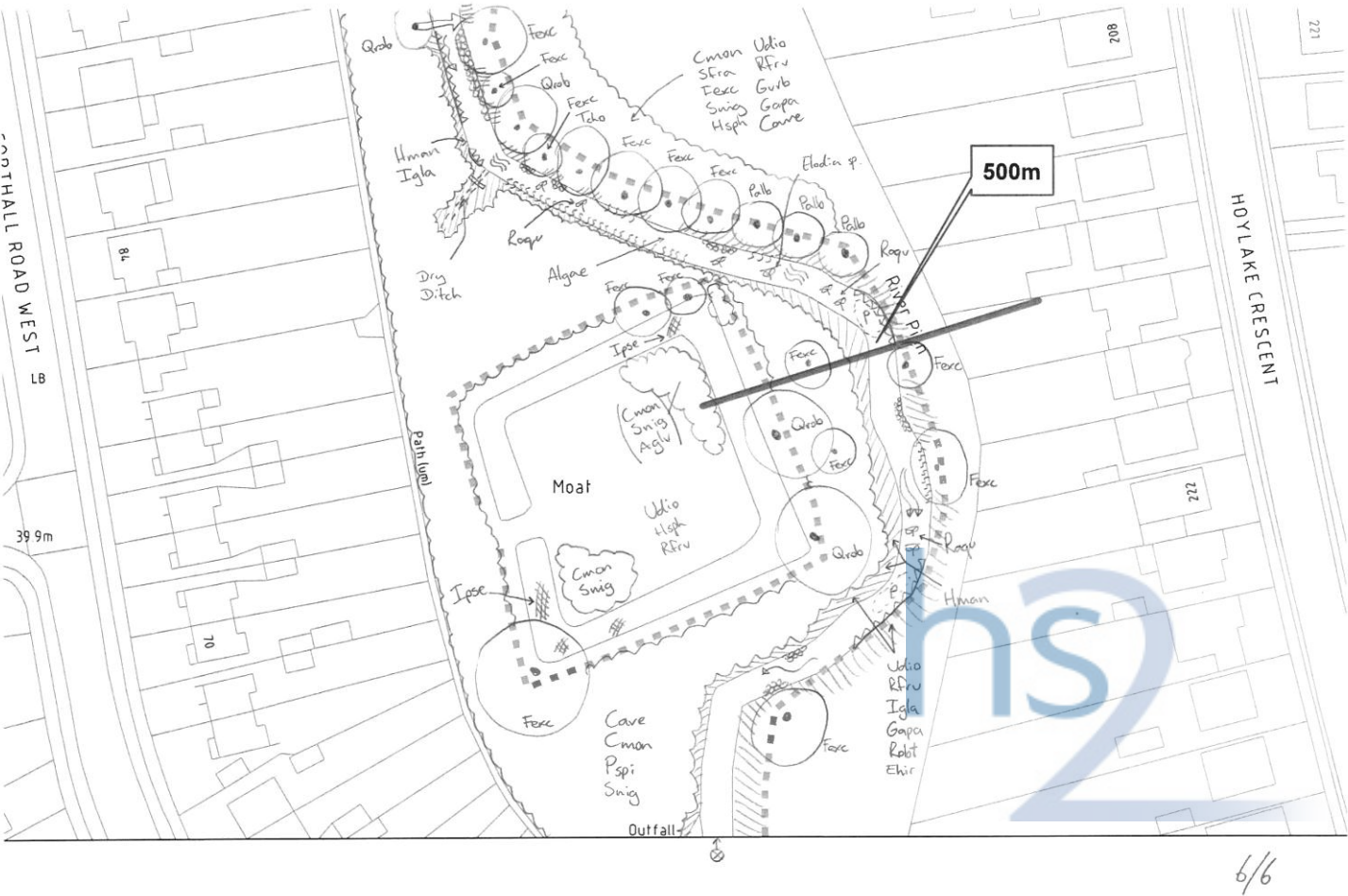


Figure 19: River Pinn (page 6)



## 8 Hedgerow survey

### 8.1 Introduction

- 8.1.1 This section of the appendix presents details of hedgerow survey, and associated desk study information for the section of the Proposed Scheme that will pass through CFA1 to 6 inclusive.

### 8.2 Methodology

- 8.2.1 Details of the standard methodology utilised for hedgerow surveys in support of Proposed Scheme are provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2)..
- 8.2.2 Where access has not been available for field survey then where available data from pre-existing habitat surveys has been utilised to provide a description of habitats relevant to the assessment.
- 8.2.3 Pre-existing data was requested from Greenspace Information for Greater London (GiGL)<sup>20</sup>, as part of the wider desk study. No relevant information was returned.

### 8.3 Deviations, constraints and limitations

- 8.3.1 There were no local methodological deviations.
- 8.3.2 Completeness of survey data was affected by lack of access. When surveying from Public Rights of Way (PRoW) hedgerow surveys could not be undertaken. The description of the limitations and constraints for Phase 1 surveys detailed in Section 5 largely also apply to hedgerow surveys.

### 8.4 Baseline

#### CFA1 and 2

- 8.4.1 No hedgerows were present in CFAs 1 and 2.

#### CFA3

- 8.4.2 No hedgerow surveys were undertaken in CFA3.
- 8.4.3 A single planted hedgerow is reported within the management plan to be present at Adelaide LNR. The hedgerow is described as gappy, and comprises a number of non-native species, including Caucasian Oak (*Quercus macranthera*), Holm Oak (*Quercus ilex*) and Turkey Oak (*Quercus cerris*). This hedge has been planted in recent years, and so is unlikely to qualify as important under the Hedgerow Regulations 1997.

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<sup>20</sup> Greenspace Information for Greater London. Available from: <http://www.gigl.org.uk/>. Last accessed: August 2013.

#### CFA<sub>4</sub>

- 8.4.4 No hedgerow surveys were undertaken in CFA<sub>4</sub>. Any hedges that contain native species were associated with cemeteries, parks or gardens, and accordingly fall outside the remit of the Hedgerow Regulations 1997.
- 8.4.5 Trees, hedgerows and woodland is a Hammersmith and Fulham BAP habitat. These hedgerows may qualify as a Section 41 NERC Act habitat of principal importance<sup>21</sup>, hedgerows.

#### CFA<sub>5</sub>

- 8.4.6 No hedgerow surveys were undertaken in CFA<sub>5</sub>. Any hedges that contain native species were associated with cemeteries, parks or gardens, and accordingly fall outside the remit of the Hedgerow Regulations 1997.

#### CFA<sub>6</sub>

- 8.4.7 Hedgerow surveys were scoped out in most of the extended Phase 1 Habitat Surveys of sites with native species hedges that might fall within the remit of the Hedgerow Regulations 1997, e.g. across agricultural land between Breakspear Road South and Harvil Road. Almost always this will have been because only species-poor hawthorn (*Crataegus monogyna*) hedges are present.
- 8.4.8 At Copthall Farm the hedges are slightly richer in woody species, and three of the better hedges were accordingly surveyed with regard to the Hedgerow Regulations 1997.
- 8.4.9 These hedges are mostly trimmed to heights of about 1.5m to 2.5m though there are a few overgrown hedges. There are occasional hedgerow trees, mostly ash (*Fraxinus excelsior*) or pedunculate oak (*robur*) in at least some of the hedges. A few have small field-ditches that, though they may be wet at the bottom, nevertheless contain rough grassland or tall-herb vegetation rather than wetland vegetation. Many have small banks, though large hedge-banks are not generally a feature of the area. Though some hedges are defunct (i.e. more than 10% gaps), most are intact and well connected to one another. Thus for example at Copthall Farm, whatever the quality of the individual hedges, there is a fine hedgerow network not too greatly disrupted by hedgerow removal.
- 8.4.10 From the above it follows that many hedges in the area have many of the physical features that score towards making a hedge an 'important hedge' under the Hedgerow Regulations 1997. At Copthall Farm for example, many individual hedges would have at least four features, i.e. less than 10% gaps, more than four connection points (under a system of identifying connections set out in the Regulations), standard trees, and a ditch. A few might also have two further scoring features, i.e. a bank, and more than three of the woodland herbs listed under Schedule 2 in the Regulations.

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<sup>21</sup> Natural Environment and Rural Communities (NERC) Act 2006 (2006). *Section 41: Habitats of Principal Importance in England*. Her Majesty's Stationery Office, UK.

- 8.4.11 Nevertheless, hedges cannot qualify as important hedges on these physical features alone, and sampling therefore focussed on the more species-rich hedges. As it happens, the species-rich hedges at Copthall Farm have fewer of the physical features than usual.
- 8.4.12 Therefore none of the hedgerows surveyed qualified as important due to low number of species or lack of physical features set out in the hedgerow regulations. The hedgerows may qualify as a Section 41 NERC Act habitat of principal importance, hedgerows.
- 8.4.13 A further area, located to the south-east of Bayhurst Wood, was included in the scheme design towards the end of project surveys and no access was permitted for detailed surveys. Surveys from PRoW recorded agricultural land including hedgerows. The scoping survey identified some of the hedgerows may be 'important', and are in close proximity or adjoin to Bayhurst Wood, a SSSI, NNR and SMI and ancient woodland. It is therefore assumed that some of these hedgerows are likely to qualify as 'Important' under the Hedgerow Regulations 1997.

## 9 Ditch survey

### 9.1 Introduction

- 9.1.1 This section of the appendix presents details of the ditch surveys and associated baseline data for the section of the Proposed Scheme that will pass through Community Forum Area (CFA) 1 to 6 inclusive.

### 9.2 Methodology

- 9.2.1 Details of the standard methodology utilised for ditch surveys are provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2).
- 9.2.2 Pre-existing botanical and invertebrate data was obtained from Greenspace Information for Greater London (GiGL)<sup>22</sup>. No relevant data was returned.
- 9.2.3 No ditch surveys were undertaken in CFA1 to 6 (see below).

### 9.3 Deviations, constraints and limitations

- 9.3.1 The principle constraint was the limitation of access to undertake field surveys for any of the identified ponds, and the ability to adequately scope survey requirements was also constrained.
- 9.3.2 Table 32 provides a summary of locations at which ditch surveys may have been required.

Table 32: Summary of locations where requirement for ditch survey was identified, but no access available for survey

Survey site name	Survey location	Description	CFA	Distance from the Proposed Scheme (m) and orientation
Reedbeds adjacent to the Grand Union Canal at Greenford.	TQ141842	An area of reedbed and a ditch network located to the north-west of the Grand Union Canal near Carr Road, Ealing.	5	Adjacent
Drain running east-west located in fields to the north of Newyears Green Lane	TQ067881	Drain running east-west within arable fields to the north of Newyears Green Land. From aerial photographs there appears to be little adjacent vegetation as the arable farmland extends up to the ditch with no margins. It is not known if this ditch holds water throughout the year.	6	Within
Drain running north-south located in fields to the north of Newyears Green Lane	TQ066881	Drain running north-south between arable fields to the north of Newyears Green Land. From aerial photographs there appears to be adjacent vegetation in the form of trees and rough grassland. It is not known if this ditch holds water throughout the year, but it appears to feed into Newyears Green Bourne.	6	Adjacent

<sup>22</sup> Greenspace Information for Greater London. Available from: <http://www.gigl.org.uk/>. Last accessed: August 2013.

## **9.4 Baseline**

### **CFA 1 to CFA 4**

- 9.4.1 No ditches were identified within CFAs1 -4.

### **CFA5**

- 9.4.2 Field surveys were not possible for the reedbeds and ditch system adjacent to the Grand Union Canal at Greenford and there is no relevant desk study information in the area. It is not possible to rule out that the ditches may support plant and aquatic invertebrate species of conservation interest.

### **CFA6**

- 9.4.3 Field surveys were not possible for identified ditches in CFA6 and there is no relevant desk study information, although it is not possible to rule out the presence of species of interest. The drain north of Newyears Green Lane running east-west is located between arable fields without any margin of vegetation and is unlikely to be of conservation interest. The drain running north-south appears, from aerial photography, to extend between two lines of trees and rough grassland. It is possible that this north-south drain supports plants and aquatic invertebrates of conservation interest.

## 10 Pond survey

### 10.1 Introduction

10.1.1 This section of the appendix presents details of the pond surveys and relevant associated desk study data for the section of the Proposed Scheme that will pass through Community Forum Area (CFA) 1 to 6 inclusive.

### 10.2 Methodology

10.2.1 Details of the standard methodology utilised for pond surveys are provided in Scope and Methodology Report Addendum (Volume 5: Appendix CT-001-000/2).

10.2.2 Desk study records relevant to the baseline for aquatic macro-invertebrate and aquatic plants were obtained from the following sources.

- Pre-existing invertebrate data from Greenspace Information for Greater London (GiGL)<sup>23</sup>; and
- The London Natural History Society invertebrate recorders<sup>24</sup>.

### 10.3 Deviations, constraints and limitations

10.3.1 Field survey was limited to initial scoping from Public Rights of Way (PRoW) from which some ponds could be viewed and supplemented by aerial photography. The ability to adequately scope survey requirements was also constrained. No further survey including Rapid Assessment Methodology, Predictive System for Multimetrics (PSYM) and National Pond Survey (NPS) was undertaken due to access restrictions.

10.3.2 Table 33 identifies those ponds where the requirement for survey was identified.

Table 33: Summary of locations where requirement for pond survey was identified

Ecology survey code	Pond description	Survey method proposed	CFA	Approximate distance from the Proposed Scheme (m) and orientation
010-PS1-023001	A pond is present towards the club house on the east of the golf course. It is not adjacent to PRoW, and so could not be inspected. From aerial photography the pond appears to measure 20 m x 10 m and appears to have some marginal vegetation but is partially over-shaded by at least two adjacent trees, so little further information can be gained from aerial photography.	Initial scoping to inform the need for Rapid Assessment Method	6	Within
010-PS1-024005	A recently created pond, apparently formed by 'ponding up' of water from a drainage channel, is present in the south of the golf course. From aerial photography the pond appears to	Initial scoping to inform the need for Rapid Assessment	6	Within

<sup>23</sup> Greenspace Information for Greater London. Available from: <http://www.gigl.org.uk/>. Last accessed: August 2013.

<sup>24</sup> London Natural History Society, available from: <http://www.lnhs.org.uk/Recorders.htm>. First accessed: January 2013.

Ecology survey code	Pond description	Survey method proposed	CFA	Approximate distance from the Proposed Scheme (m) and orientation
	measure 20 m x 20m. The pond is surrounded by trees / scrub. Little further information can be gained from aerial photography	Method method		
010-PS1-023002	A pond located at the foot of the railway embankment at the western end of the golf course. Access did not permit close inspection, but from a nearby PRow, it appeared to be a shallow pond, surrounded and shaded by willows, with little emergent or aquatic vegetation. Due to tree cover, little further information can be gained from aerial photography.	Initial scoping to inform the need for Rapid Assessment Method	6	Within
010-PS1-024001	There are two ponds at the pharmaceutical research facility both of which hold water and support marginal and aquatic vegetation including rushes ( <i>Juncus</i> sp), sedges ( <i>Carex</i> sp) and have a 100% algal cover. One pond also has willowherb ( <i>Epilobium</i> sp) in the margin vegetation. The ponds are located within areas of amenity grassland.	Initial scoping to inform the need for Rapid Assessment Method	6	Within
010-PS1-024002-004	Three ponds are present in agricultural land north of St Leonards Farm. These ponds have not been surveyed. Two small ponds (14 m x 5 m, and 25 m x 6 m) are adjacent to hedgerows and partly over-shaded such that little further information can be gained from aerial photography. One further larger water body may be present, measuring some 55 m x 10m.	Initial scoping to inform the need for Rapid Assessment Method	6	Within

## 10.4 Baseline

### CFA1 to CFA5

10.4.1 No impacts are expected to ponds within CFA1-5.

### CFA6

10.4.2 Ponds at Ruislip Golf Course and the pharmaceutical research facility are set within intensively managed amenity grassland settings and there are no desk study records relating to notable / protected plants or invertebrates in the area. The eastern most pond of the Golf Course was over-shaded and did not appear to support noticeable quantities of aquatic or marginal vegetation. It is assumed that there are unlikely to be and notable or protected plants or invertebrates at any of these ponds and they are likely to be of low conservation interest.

10.4.3 Ponds north of St Leonard's Farm and south of Bayhurst Wood appear to be over-shaded by adjacent hedgerow vegetation and are within an intensively managed agricultural setting. There are no desk study records relating to notable / protected plants or invertebrates in the area. Given the surrounding vegetation and the

proximity and connectivity to Bayhurst Wood which is known to support invertebrate species of conservation interest, the presence of notable species cannot be ruled out and the ponds may be of conservation interest.

## **11**      **Lakes**

### **11.1**      **Introduction**

- 11.1.1      No Lake surveys were conducted in CFAs 1 to 6. There are no lakes or other similar water bodies in CFAs 1-6. No field surveys were undertaken and there is no relevant desk study information to report.

## 12 References

Greenspace Information for Greater London, <http://www.gigl.org.uk/>.

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<http://jncc.defra.gov.uk/page-3408>, First accessed in May 2013.

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Natural England, Ruislip Woods SSSI citation accessed at  
[http://www.sssi.naturalengland.org.uk/special/sssi/sssi\\_details.cfm?sssi\\_id=1003633](http://www.sssi.naturalengland.org.uk/special/sssi/sssi_details.cfm?sssi_id=1003633).

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